

The University of Chicago

BRIGHT TOBACCO
IN THE AGRICULTURE, INDUSTRY
AND FOREIGN TRADE OF
NORTH CAROLINA

A DISSERTATION SUBMITTED TO THE FACULTY
OF THE DIVISION OF THE PHYSICAL SCIENCES
IN CANDIDACY FOR THE DEGREE OF DOCTOR
OF PHILOSOPHY

DEPARTMENT OF GEOGRAPHY

1939

By

SAMUEL THOMAS EMORY

Private Edition, Distributed by
THE UNIVERSITY OF CHICAGO LIBRARIES
CHICAGO, ILLINOIS

1939

The University of Chicago

BRIGHT TOBACCO
IN THE AGRICULTURE, INDUSTRY
AND FOREIGN TRADE OF
NORTH CAROLINA

A DISSERTATION SUBMITTED TO THE FACULTY
OF THE DIVISION OF THE PHYSICAL SCIENCES
IN CANDIDACY FOR THE DEGREE OF DOCTOR
OF PHILOSOPHY

DEPARTMENT OF GEOGRAPHY

1939

By

SAMUEL THOMAS EMORY

Private Edition, Distributed by
THE UNIVERSITY OF CHICAGO LIBRARIES
CHICAGO, ILLINOIS

1939



ACKNOWLEDGMENT

It is not feasible to thank individually all the persons who have contributed to this study. Tobacco farmers, tobacco buyers and traders, chamber of commerce secretaries, county farm agents, and officials of the North Carolina Department of Agriculture and the North Carolina Department of Conservation and Development have given unsparingly of their time and of their specialized knowledge. The Author is particularly grateful to Messrs. Lionel Weil, R. P. Philips, and G. L. Thompson for making it possible for him to study individual farms, and to Messrs. W. Duvall Brown, William Holmes Davis, and H. S. Smith for technical and general information as to the tobacco export trade and the Virginia ports. He wishes to thank the North Carolina Department of Agriculture for the photographs shown in Figures 6-9 and 11 and 12; the Chamber of Commerce of Durham for the air views shown in Figures 19 and 20; and the Crop Reporting Service of the United States Department of Agriculture for the photographs from which Figures 14 and 15 were taken.

Thanks are due Professor Charles C. Colby for patient and skilful guidance in the preparation of this manuscript and to Professors Wellington D. Jones and Henry M. Leppard for assistance with maps and photographs.

Samuel Thomas Emory
Chapel Hill, N.C.

TABLE OF CONTENTS

	Page
ACKNOWLEDGMENTS.	11
LIST OF TABLES	1v
LIST OF ILLUSTRATIONS.	vi
 Chapter	
I. CHARACTERISTICS AND CRITICAL ASPECTS OF THE INDUSTRY	1
II. THE LOCALIZATION AND DEVELOPMENT OF BRIGHT TOBACCO .	7
Origin and Background	7
Localization	13
Geographic Factors Affecting Localization in North Carolina	17
Tobacco Acreage Within the Tobacco Belts.	39
Attempts to Control Bright Tobacco Production	44
Tobacco, the "First Crop".	52
Landscape Changes	52
III. PRODUCING BRIGHT TOBACCO.	55
Growing and Curing the Leaf	56
Marketing the Crop	76
Three Type Farms.	86
IV. BRIGHT TOBACCO IN MANUFACTURE AND FOREIGN TRADE . .	106
The Manufacturing Town.	119
The "Independents"	122
The General Foreign Trade in Tobacco, 1860-1923	123
Bright Tobacco in Foreign Trade, 1923-1937	129
Post-War Exports of Bright Tobacco Manufacturers	136
Trade Channels of Bright Tobacco Export	137
V. CONCLUSIONS	142
BIBLIOGRAPHY.	149

LIST OF TABLES

Table	Page
1. Average Monthly Precipitation in Selected North Carolina Towns.	18
2. Average Monthly Precipitation in Selected North Carolina Towns for the Five Months Growing Period . . .	20
3. Average Monthly Temperatures in Selected Towns of the North Carolina Tobacco Belts.	21
4. Average Monthly Temperatures in Selected Towns of the North Carolina Tobacco Belts for the Five Months Growing Period	22
5. South-Central and Middle Belt Climates	23
6. Northeastern and New Belt Climates.	23
7. Southeastern and Border Belt Climates.	24
8. Average Frost-Free Period at Selected Stations. . .	24
9. Latest Recorded Killing Frost at Selected Stations .	25
10. Road Frontage of Tobacco in the Old Belt by Soil Types	30
11. Road Frontage of Tobacco in the Middle Belt by Soil Types	31
12. Road Frontage of Tobacco in the New Belt by Soil Types	33
13. Road Frontage of Tobacco in the Border Belt by Soil Types	34
14. The Soils of Mecklenburg and Caswell Counties . . .	35
15. Acreages of Chief North Carolina Crops in 1936. . .	40
16. Tobacco Occupance in North Carolina by Decades. . .	41
17. Tobacco Soils and Tobacco Acreages in Selected Counties	41
18. Principal Crops in Selected Counties for Stated Years	42
19. Tobacco Acreage in Stated Years by States	44
20. Production, Farm Price, Farm Value, and Export of	

LIST OF TABLES - Continued

Table	Page
Bright Tobacco for Stated Years.	48
21. North Carolina Tobacco under the A.A.A.	51
22. Crop Acreages on the Thompson Farm.	104
23. Domestic Consumption of Small Cigarettes for Stated Years	115
24. Average Exports of Leaf Tobacco from the United States for Stated Periods.	126
25. Chief Purchasers of United States Leaf Tobacco for Stated Periods	126
26. Bright Tobacco Leaf Exports for Stated Years . . .	130
27. Chief Purchasers of Bright Tobacco for Stated Years .	131
28. Exports of Bright Tobacco Leaf, by Countries of Des- tination, 1937	131
29. Export of Tobacco Leaf and Stems, by Customs Dis- tricts, 1918-1937	140

LIST OF ILLUSTRATIONS

Figure	Page
1. Bright Tobacco Belts	3
2. Physiographic Divisions, Selected Weather Stations, and Type Farms in North Carolina	5
3. North Carolina Bright Tobacco Acreage by Counties, 1937.	28
4. North Carolina Tobacco Soils.	29
5. An Old Belt Plant Bed, Looking West	64
6. Transplanting Tobacco with a Hand Machine	64
7. The First Priming	64
8. The Last Priming.	64
9. Hauling Leaf to the Handling Shed	73
10. Three Types of Tobacco Barn	73
11. An Auction Sale	73
12. An Old Belt Scene	73
13. Markets, Re-drying Plants, and Railroads of the North Carolina Tobacco Belts.	78
14. Airplane View of Piedmont Tobacco Area	88
15. Airplane View of a Coastal Plain Tobacco Area	88
16. An Old Belt Farm.	90
17. A New Belt Farm	97
18. A Border Belt Farm	102
19. Air View of the Commercial Center of Durham, Showing Warehouses and, at Top, Left, the American Tobacco Company Factory	121
20. Storage Houses of the Liggett and Meyers Tobacco Com- pany, North of Durham	121

CHAPTER I

CHARACTERISTICS AND CRITICAL
ASPECTS OF THE INDUSTRY

Bright tobacco is by far the most important type of tobacco produced in the United States. It occupies more acreage than any other American type, has a greater poundage quota in Government allotments, and has a higher annual value. It is the principal ingredient of the "blended" cigarette, the chief item in domestic manufacture, and it accounts for 75 per cent of the United States tobacco export. For the past decade, moreover, the average annual export alone of bright tobacco has exceeded the average annual tobacco production of any other nation except India, China, or Soviet Russia.

Bright tobacco was originated in 1852 by an experienced tobacco farmer in the Piedmont section of the present North Carolina producing area. Because of its bright yellow color and its mild and pleasant aroma and flavor, the new strain almost immediately became a commercial success. Following the Civil War, both domestic and foreign demand increased notably and its acreage and production expanded. At this time the demand for bright tobacco came principally from domestic manufacturers of plug and pipe tobacco. After 1880 the market widened. In fact, the expansion of the industry from about 1880 to 1914 was as definitely attendant upon increases in domestic consumption of cigarettes and in export of the leaf as it was upon increases in demand by manufacturers of pipe and plug tobacco. The very rapid increase in production since the World War, moreover, has been due largely to the phenomenal increase in consumption of "blended" cigarettes in the United States and of similar cigarettes abroad. Consumption of plug and pipe tobacco has declined both relatively and absolutely in recent years. The United Kingdom leads foreign countries in demand for bright tobacco, followed by China, Australia, and Canada, in the order named.

After bright tobacco demonstrated its commercial signifi-

cance, its culture was attempted in many states of the Union and in a number of other tobacco-growing countries. Most of these attempts resulted in failure, and today the production of bright tobacco practically is confined to four of our South Atlantic states. North Carolina, where the industry began, still leads in production of the leaf and it has an even greater hold on the manufacturing phase of the industry. Virginia is second in leaf production and in bright tobacco manufactures. South Carolina and Georgia are important producers of bright tobacco leaf, and Florida and Alabama have small producing areas.

Manufacture of the "blended" cigarettes into which most bright tobacco goes is confined in the main to an area extending from north-central North Carolina to central Virginia. Cigarette manufacture in this area is limited to five cities, and these five cities manufacture 84 per cent of the nation's cigarettes. Practically all manufacture of other bright tobacco products in this area is carried on in the same cities. This highly localized manufacturing is largely in the hands of three great companies. All of these originated in North Carolina and developed from a much larger number of small companies formerly operating in the State. Today, these great companies strenuously compete for the favor of the buying public. In fact, their advertising campaigns rank them among the most active of American advertisers.

Because of the leading position of North Carolina in all phases of the bright tobacco industry, the present investigation is confined to that State. North Carolina originated bright tobacco and grows over half the crop. Each of fifty-six of the State's 100 counties grows more than 1,000 acres of bright tobacco, and the total value of the crop is nearly half of the total value of all North Carolina crops. North Carolina except for a small recent Burley development in the mountain counties (Fig. 2), produces only bright tobacco, whereas Virginia, the only other important producer of bright tobacco until recent years, grows several other types. The manufacture of bright tobacco, moreover, began in North Carolina, and the State has participated in all subsequent developments. North Carolinians were the chief organizers in 1890 of the old American Tobacco Company, the company from which the great cigarette concerns of today were formed. Taxes paid the National Government by its tobacco companies rank North Carolina among the leading states in contribu-

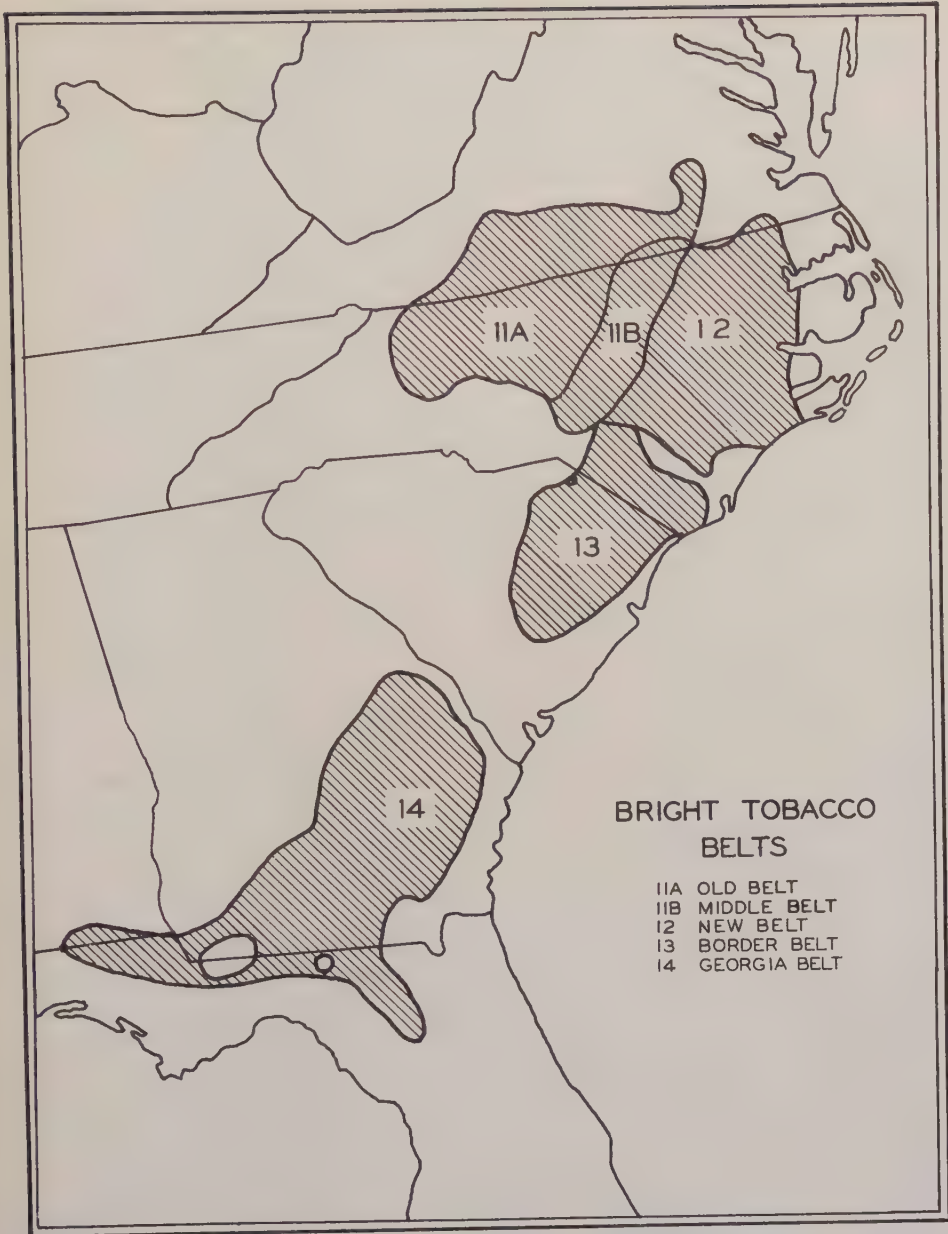


Fig. 1.--Bright tobacco belts

tions to the Federal Treasury. Furthermore, North Carolina is the seat of a number of exporting firms and the origin of much of the enormous leaf tonnage which enters our export trade.

North Carolina is an important producer of four of the five sub-types of bright tobacco recognized by the Federal authorities (Fig. 1). In common with Virginia, it grows type 11A on the rolling generally forested red sandy soils of the Piedmont (Figs. 1 and 2). The producing area for this type occupies the northern third of this section of North Carolina and an adjacent area in Virginia. From east to west it extends from the foothills of the Blue Ridge almost to the Fall Line. This area is known as the Old Belt (Fig. 1). The two states also grow type 11B on the rolling moderately forested red and gray soils of the Middle Belt astride the Fall Line. In the coastal plain, North Carolina is practically the sole producer of type 12. This area is known as the New Belt and most of the crop comes from Norfolk sandy loams. In addition, North Carolina, in common with South Carolina, grows type 13 on the sandy divides between the great forested swamps which characterize this section of the coastal plain. This area is known as the Border Belt. A study of bright tobacco in North Carolina, therefore, involves all but one of the producing belts and a notable proportion of the entire area producing the crop (Fig. 1). North Carolina shows not only the variation between the belts as stated above but their broad similarities. Furthermore, in the techniques of cultivating, curing, and marketing the crop, the several belts are in general agreement. North Carolina, therefore, is truly representative of all phases of the bright tobacco industry.

Although the bright tobacco industry is highly localized and its market is established and large, there are many problems so critical that they threaten the prosperity and even the continuance of the industry. Bright tobacco cultivation in the Old Belt depletes and destroys the land, and in all belts it hampers soil building because it limits the use of legumes for this purpose. Bright tobacco is subject to attack by a great variety of fungus diseases and insects, and there is always a possibility that such an attack may destroy the crop in the plant beds¹ or in the fields to which it is transplanted. It demands a great deal of wood for

¹Tobacco plants are grown under cover in a plant bed until they are some four to six inches high.

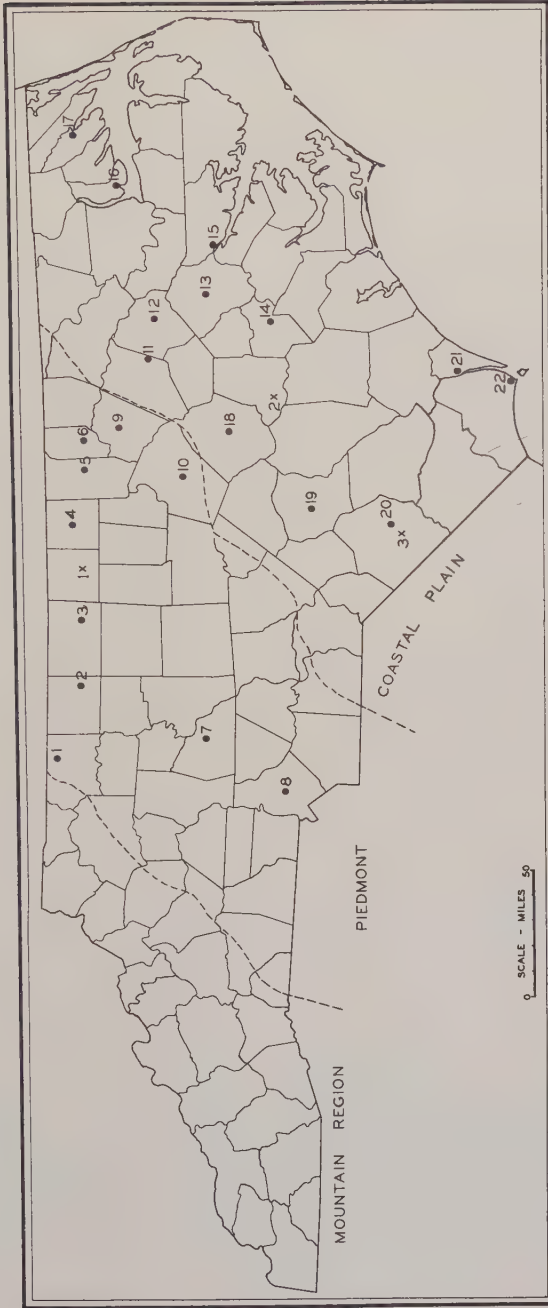


Fig. 2.--Physiographic divisions, selected weather stations, and type farms in North Carolina.

fuel in the curing process, and parts of the producing area find this demand increasingly hard to meet. Financing the crop is a serious problem because of its long and expensive growing season and short selling period. There is always danger of overproduction, and control of production presents a number of domestic and international problems. The wide fluctuation of prices presents a problem of stabilization. Sale of the leaf is in distinctly a buyer's market, and protection of the farmer's interests is a matter of grave concern. International policies are involved in the attempts of other nations to produce substitutes for bright tobacco and to use these substitutes in their tobacco manufactures. Heavy cigarette taxes in the United States, imposed by the Federal Government and by many states, are a burden on both the grower and the manufacturer of bright tobacco. It is a serious question whether this taxation is fully justified. The fierce and expensive competition of cigarette manufacturers for the domestic market involves problems of cost and of stability. Moreover, the fact that the primary market of bright tobacco is in the "blended" cigarette and that the tobacco taste of the public is notoriously fickle means that the manufacturers must not only hold their present clientele but must ceaselessly recruit it. This raises a general question as to the security of the industry as a whole.

Although much practical, experimental and scientific attention has been paid to bright tobacco, the industry has not been studied as a single working unit.¹ Various phases of the industry have been examined critically, as for example plant bed diseases, and methods of cultivating and curing tobacco. Marketing also has been studied, as have manufacture and the export trade in at least some of their intricate ramifications. The present investigation, however, is directed to the entire structure of the industry, and to the interplay of conditions and forces which affect it. This involves an over-all regional and inter-regional treatment--a treatment especially appropriate for a geographic investigation. The sought objective is an understanding not only of each phase of the industry but of the ways in which and the extent to which these phases are integrated into a commercial activity of state, national and international significance.

¹The outstanding studies are marked with an asterisk in the list of bibliographical references.

CHAPTER II

THE LOCALIZATION AND DEVELOPMENT OF BRIGHT TOBACCO

Origin and Background

The origin of bright tobacco.--Bright tobacco is an agricultural discovery of comparatively recent years. Eli and Elisha Slade, tobacco farmers of Caswell County, North Carolina, are credited with the first production.¹ They broke precedent in 1852-1853 by setting tobacco plants in the light, sandy, infertile soil of a ridge between two tributaries of the Dan River and by fertilizing with only a thin dressing of stable manure, rather than using their best valley soil and dressing the crop heavily with manure. Though the Slades had grown their plants from ordinary local seed, the mature tobacco was strikingly different from the typical neighborhood product. It was lighter in color and in weight. When cured over charcoal fires in a tobacco barn, it took on a beautiful lemon-yellow to golden-orange color, was light-bodied and fine of texture, and developed a flavor and aroma which seem to have won it immediate recognition as a new and desirable type of tobacco.²

The background.--The Slade tobacco was a new variety, and it caused an astonishing readjustment in parts of six southeastern states, but its background was old. A tobacco tradition two and

¹J. B. Killebrew, "Culture and Curing of Tobacco in North Carolina," Tenth Census of the United States: 1880. Statistics of Agriculture, U. S. Census Office, Vol. III (Washington: Government Printing Office, 1883), p. 704.

²Ibid., pp. 112-14.

³Sources for this account of the conditions which had a bearing on the early development of tobacco cultivation are as follows: Joseph Clarke Robert, The Tobacco Kingdom (Durham: Duke University Press, 1938); Lewis Cecil Gray, History of Agriculture in the Southern States to 1860 (2 vols.; Washington: The Carnegie Institution of Washington, 1933); J. B. Killebrew and Herbert Myrick, Tobacco Leaf (New York: Orange Judd Company, 1897); George K. Holmes, "Three Centuries of Tobacco," Yearbook of Agriculture, 1919, U. S. Department of Agriculture (Washington: Gov-

a half centuries or more in Virginia and North Carolina not only contributed to its origin, but profoundly affected its development. This background was laid chiefly in Virginia, for Virginia was the great tobacco state of the eastern seaboard until bright tobacco changed the production pattern. The much smaller, though considerable, tobacco crop of North Carolina was exported mainly through Virginia ports in colonial days and was manufactured mainly in Virginia in the first half of the nineteenth century. Throughout this time, and in fact to the present, much of the North Carolina product was labelled "Virginia" on the world market.¹ As tobacco was of distinctly minor importance in ante-bellum North Carolina, North Carolina's tobacco statistics for the earlier years are meager. Tobacco dominated the first two centuries of Virginia history and the story of tobacco in early Virginia is much more satisfactorily recorded.

Virginia and North Carolina were not the only tobacco states prior to 1852. Tobacco cultivation was important in Maryland, Tennessee, Kentucky, Ohio, Connecticut, and other states prior to the Civil War. These states had developed their own varieties of tobacco, however, related to bright tobacco only in

ernment Printing Office, 1920); W. W. Garner et al., "The Story of the Development of the Present Day Varieties of Tobacco," Yearbook of Agriculture, 1936, U. S. Department of Agriculture (Washington: Government Printing Office, 1937); Harris Gary Hudson, A Study of Social Regulations in England under James I and Charles I: Drink and Tobacco (Chicago: University of Chicago Libraries, 1931); William E. Dodd, The Old South Struggles for Democracy (New York: The MacMillan Company, 1937); Thomas Jefferson, Notes on the State of Virginia (Boston, 1832); P. A. Bruce, The Economic History of Virginia in the 17th Century (2 vols.; New York: The MacMillan Company, 1895); L. A. Wolfanger, "Abandoned Land in a Region of Land Abandonment," Economic Geography, Vol. VII (1931); R. D. W. Connor, History of North Carolina, Vol. I (6 vols.; Chicago: The Lewis Publishing Company, 1919).

¹Connor, op. cit., p. 68, quotes the London Commissioners of the Customs as writing, in 1679: "... the quantity of tobacco that groweth in Carolina is considerable and it increaseth every year, but it will not appear in the Custom house books what customs have been received in England for that by reason of the Badness of the Harbour in these parts, most of the tobacco of growth of these countreys have been and are carryed from thence in sloops or small fetches to Virginia and New England from whence shipped hither. So that the Enteries here in London are from Virginia and New England although the tobacco be of the growth of Carolina and Albemarle." The Census of 1850 gives the tobacco production of North Carolina in 1849 as approximately a fifth that of Virginia. Much North Carolina tobacco still goes on the world market as "Virginia Brights."

that all types stemmed from the same original variety.¹ It was the tobacco of Virginia and North Carolina which was the progenitor of bright tobacco and which made way for it in land occupation and in the world market.

Tobacco consumption and cultivation spread rapidly after the discovery of the New World. Spanish explorers had found Indians using tobacco in both North and South America and had introduced its use and cultivation to Europe before the end of the sixteenth century. Tobacco proved to be very responsive to variations in climate and soil, and the product of northwestern Europe was rather insipid, that of England proving particularly unpalatable. English colonists in Virginia and northeastern North Carolina developed a mild, aromatic variety of tobacco which was pleasing to the European taste. It dominated the British market throughout the Colonial period, and British traders organized a great re-export trade with other countries of northwestern Europe.² The use of tobacco was opposed on several grounds,³ and a general feeling that its use was at least mildly harmful gave public support to extremely heavy taxation and to various governmental restrictions designed to control domestic production in European countries and their possessions and to foster home production, within limits, as opposed to foreign imports. Despite taxation and restriction, and in the face of bitter opposition, the importation of tobacco increased steadily in Europe, and its use and cultivation spread to almost every part of the earth.

Tobacco was the great money crop of colonial Virginia and, to a degree, of colonial North Carolina. It was soon over-produced, and many efforts at control of the quantity of production proved ineffectual.⁴ Government control of quality, by an inspec-

¹Garner *et al.*, *op. cit.*

²Gray, *op. cit.*, pp. 243 ff. and 255.

³Tobacco did not lack defenders, however. For example, Katherine Hoskins in the Greensboro Daily News, November 7, 1937, quotes a Doctor William Barclay as writing in Scotland, in 1611: "It (tobacco) preserveth from the toothache, it cureth from the migraine, the colicke, the cough, the cold; it stayeth the growing fatte; it is the antidote of Hypochondriacke melancholie, it prepareth the stomache for meat, it maketh a sweet breathe, it cleaneth the sight, it comforteth the nerves--and in a few words, it is the princess of physical plants."

⁴Hudson, *op. cit.*, p. 30; Dodd, *op. cit.*, pp. 70 f.; Robert, *op. cit.*, pp. 8-11.

tion system, was more successful. By the time of the Revolution, tobacco cultivation had about exhausted the "second bottoms" of tidewater Virginia and was extending westward along the rivers of Piedmont Virginia and northern North Carolina (Fig. 2). The change in soil and climate eliminated the "Sweet-scented" tobacco which had best suited the British taste, and the Revolution, the War of 1812, and the series of Napoleonic wars in Europe seriously upset the export trade. The Piedmont counties of southern Virginia and northern North Carolina developed, before the Civil War, a distinctive type of tobacco which competed, in the domestic market primarily, with tobaccos from other states and enjoyed a reduced export trade with Great Britain and other European countries. Soil destruction was very serious on the sloping lands of the Piedmont, competition from western states was active, returns were meager, and by about 1850 it appeared quite probable that tobacco would soon disappear from the Piedmont as it had long since disappeared from the Tidewater.

The growing process had become set long prior to 1850, with generations of experience in producing tobacco,¹ and air-

¹Gray, *op. cit.*, pp. 215-16, quotes Thomas Glover thus in describing, in 1671, a cultivation and curing process substantially the same as that practiced in the border counties until the Civil War:

"The Manner of Planting and Ordering Tobacco is thus: In the twelve Days they began to sow their Seed in beds of find Mould, and when the Plants be grown to the Breadth of a Shilling, they are fit to replant into the Hills; for in their Plantations they make small Hills about 4 foot distant from each other, somewhat after the Manner of our Hopyards. These Hills being prepared against the Plants be grown to the forementioned Bigness (which is about the beginning of May) they then in moist Weather draw the Plants out of their Beds, and replant them in the Hills, which afterward they keep with diligent Weedings. When the Plant hath put out so many Leaves as the Ground will nourish to a Substance and Largeness that will render them Merchantable, then they take off the Top of the Plant: if the Ground be very rich, they let a Plant put out 12 or 16 Leaves before they top it; if mean, then not above 9 or 10, and so according to the Strength of their Soil. The Top being Taken off, the Plant grows no higher, but afterwards it will put out Suckers between their Leaves, which they pluck away once a Week, till the Plant comes to Perfection, which it doth in August. Then in dry Weather, when there is a little Breeze of Wind, they cut down what is ripe, letting it lie about 4 Hours on the Ground, till such time as the Leaves, that stood strutting out, fall down to the Stalk: Then they carry it on their Shoulders into their Tobacco Houses, where other Servants taking of it drive into the Stalk of each Plant a Peg, and as fast as they are pegged, they hang them up by the

curing was the accepted method of processing the leaf, though there had been experimentation with charcoal and flue-curing. Fertilization of worn-out lands with manure had long been practiced, but was known to result in a coarse, inferior leaf. Experimentation with Peruvian guano in tobacco production, as in other crops, was under way by 1840 in the border Piedmont counties.¹

Marketing and post-Revolutionary manufacture of the Virginia-North Carolina tobacco was concentrated in Richmond, Petersburg, and Lynchburg²--towns strategically placed with reference to the chief waterways of the tobacco counties. Smaller markets, with some manufacturing, were developing in Piedmont towns near the Virginia-North Carolina boundary as tobacco cultivation shifted toward the border counties. Many small plantation factories, however, manufactured the tobacco at home and sent out twists, bags of granulated pipe tobacco, and even plugs, by wagon loads to be peddled through the countryside. Practically all Virginia and North Carolina tobacco exported was shipped through Norfolk, in the post-Revolutionary period, though much of it was re-shipped from New York.³ Marketing, both for domestic manufacturers and for the exporter, had come by 1850 to be almost exclusively by auction. Most tobacco of the area was still packed in hogsheads, but more and more loose tobacco was being offered at the smaller market towns.⁴

Tobacco cultivation, curing, marketing, and manufacture appeared to be crystallized in the Virginia-North Carolina Piedmont by the middle of the nineteenth century, and many local observers believed that it was destined to a rapid decline and even-

Pegs on Tobacco-Sticks, so nigh each other, that they just touch, much after the Manner they hang Herrings in Yarmouth: Thus they let them hang 5 or 6 weeks, till such time as the Stem in the Middle of the Leaf will snap in the Bending of it: Then when the Air hath so moistened the Leaf as that it may be handled without breaking, they strike it down, strip it off the Stalk, bind it up in Bundles, and pack it into Hogsheads for use."

¹Gray, op. cit., pp. 774-78, 805 f., 800 f.

²Robert, op. cit., pp. 54-75.

³Gray, op. cit., pp. 427 and 734; Robert G. Albion, The Rise of the Port of New York (New York: Chas. Scribner's Sons, 1939), Index.

⁴Gray, op. cit., chaps. iv and v.

tual extinction.

Development of bright tobacco.--It was against this background of some two hundred and forty years of tobacco production that the Slades' experiments were set. They chose for their tobacco field a sand ridge of a type which had been farmed and abandoned some thirty years before. They fertilized lightly, rather than heavily. They seem to have cultivated the crop in the traditional manner. They cured the tobacco over charcoal fires, presumably using some variant of the neighborhood practice in such curing. There was doubt at first as to whether the bright color and mild aroma of the Slade tobacco was the result of planting on "sand ridge" soil with light manuring or to the Slade variation of the general curing formula.¹ There appears to have been no hesitance in accepting the new tobacco. Neighbors began at once to try to reproduce it, copying the Slade methods of cultivation and curing and clearing the sandy inter-stream divides of the region for their fields. The new tobacco spread rapidly over adjoining counties of Virginia and North Carolina. Infertile soils were at a premium. The "chinquapin ridges," "huckleberry ridges," and "old fields" of the sand ridges had been selling at about fifty cents per acre prior to 1852. Their value jumped to thirty or even fifty dollars per acre within a few years.² Strong soils, formerly the prized acreage of the area, were too fertile for bright tobacco and were relegated to corn, wheat, and other food crops. Drainage in bottom lands was neglected, and floods became more serious as more and more of the steeper land was brought into cultivation. Thousands of acres of bottom land were gradually abandoned, while hill-top clearings grew and hill-top soils were eroded away under the clean cultivation which tobacco requires. The emphasis in farming shifted, in this part of the Piedmont, from lowland to upland. Farming in this section moved uphill.

The spread of bright tobacco was interrupted by the Civil War, but was resumed at its close--probably accentuated by the desperate need of the returned soldiers for a money crop and by

¹Killebrew and Myrick, *op. cit.*, p. 11, attributed the light color to the fact that the manure was exhausted during the early growing period, leaving the plant little nourishment during the maturing period.

²Ibid., pp. 11-12.

the general disruption of the old plantation economy.¹ By 1880 the new tobacco was widely grown in the border Piedmont counties from the Fall Line to the foothills of the Blue Ridge (Fig. 2). The Old Belt was firmly established (Fig. 1).² It was appearing in the northern counties of the North Carolina coastal plain, where thousands of acres of sandy land were lying unused or were producing very feebly in cotton, corn or wheat, either unoccupied or held by very backward subsistence farmers.³ Tobacco in 1880 was still, however, an "Old Belt" Piedmont crop. The "New Belt" of the coastal plain was still embryonic (Fig. 1). No coastal plain county showed as much as 900 acres of tobacco in the Census of 1880.

Localization

World-wide experimentation.--The production of a highly intensive money crop with a high per acre value of soils which had been considered almost worthless created something of a stir in the agricultural world. As a result many states and nations tried to produce bright tobacco on their lighter and more sterile soils. In 1897 experimental plantings were under way in western North Carolina, eastern Tennessee, the Coastal Plain counties of South Carolina and Georgia, and in parts of West Virginia, Ohio, Missouri, Kentucky, Arkansas, and Louisiana.⁴ Of these plantings, only those in South Carolina and Georgia have thus far attained any considerable success (Fig. 1). Various foreign governments have attempted the crop. The British Empire has found it particularly hard to accept the southeastern seaboard of the United States as the one locale of this type of tobacco. Plantings have been attempted in humid subtropical parts of the Empire, as in Natal and in Victoria Province, Australia. Some success has been attained in the provinces of Ontario and Quebec, in Canada, where

¹U. S. Department of Agriculture, Bureau of Chemistry and Soils, Soil Survey of Nash County, North Carolina (Washington: Government Printing Office, 1926).

²Killebrew, op. cit., p. 122.

³Frederick Law Olmsted, A Journey in the Southern Slave States (New York: G. P. Putnam's Sons, 1904), passim. Also the "Porte Crayon" articles in Harper's Magazine, Vol. XIV (1857).

⁴Killebrew and Myrick, op. cit., p. 12.

the climate is strikingly different from that of the South Atlantic states, while the humid subtropical areas have not been very successful. Dozens of farmers from the Old Belt went annually to Canada, in the decade following the World War, to teach Canadian farmers how to construct barns, grow the crop, cure it and prepare it for market.¹ Under their tutelage the Canadians succeeded in producing a light-colored tobacco, flue-cured, which though it lacks the flavor and aroma of the latter, to a degree can be substituted for the true bright tobacco. Rhodesia has a similar product,² and flue-curing has been introduced into twelve widely scattered parts of India, with the chief growing area in the Gunther District, some two hundred and fifty miles north of Madras.³ Apparently the most successful attempt at duplicating the bright tobacco of Virginia and the two Carolinas is that carried out by the British-American Tobacco Company in several Chinese provinces during the past thirty years. Chinese bright tobacco is conceded to look like American bright tobacco. There is difference of opinion as to how closely it approximates the American bright tobacco in flavor and aroma.⁴ It is at least a close-enough approximation, as is that of Japan, to enable its substitution, to a degree, for the American product.⁵ Germany has recently attempted flue-curing in the Saar and in Baden. Soviet Russia is attempting to produce its own bright tobacco, as well as its own burley and Maryland broad leaf. The Argentine is attempting it in Salta and Corrientes Provinces.⁶

¹Personal knowledge of the writer. Many of his former neighbors made annual trips to Canada for this purpose.

²Tobacco Markets and Conditions Abroad, May 18, 1937. Published weekly by U. S. Department of Commerce, Bureau of Foreign and Domestic Commerce.

³News and Observer, April 4, 1938. Press release from Bureau of Agricultural Economics.

⁴J. W. Swift, President of Walbrook Brothers, tobacco exporters, Goldsboro, N.C. Also Flynt Williams, Chase City, Virginia, who has spent some ten years in teaching the Chinese to grow bright tobacco. Corroborated in conversations with several other tobacco exporters.

⁵Tobacco Markets and Conditions Abroad, May 25, 1937; June 29, 1937.

⁶Ibid., May 25, 1937; August 10, 1937; July 27, 1937.

All these foreign light-colored tobaccos can be used to some extent as substitutes for bright tobacco, but apparently they cannot entirely supplant it. It is significant that two of the largest foreign producers of light tobacco, China and Canada, are large importers of bright tobacco from the United States. The Bureau of Agricultural Economics states that Indian flue-cured tobacco can be used up to 10 per cent in high-grade cigarettes.¹ Our consular service reports that German manufacturers are not satisfied with Japanese substitutes for American bright tobacco, and that they buy the Japanese product only with reluctance.² Furthermore, the Poles think that efforts of the Polish Government to force consumption of domestic tobacco and curtail bright tobacco imports are largely responsible for a decline in tobacco sales.³ Apparently the bright tobacco of Virginia and the Carolinas, Georgia and Florida, has qualities which make it desirable to most tobacco users--and, apparently, no other area has been able quite to duplicate these qualities. Tobacco men in the export trade seem to consider the foreign bright tobacco as an adulterant, providing the light color which many customers demand but requiring a judicious admixture of American bright tobacco for flavor and aroma.⁴

Localization in the United States.--Thus far bright tobacco in the United States has become an important crop in Virginia, North Carolina, South Carolina, and Georgia, and has developed in a few counties of Florida and Alabama (Fig. 1). The growing areas lie in the climatic region designated by Jones and

¹News and Observer, April 4, 1938.

²Tobacco Markets and Conditions Abroad, June 29, 1937.

³Ibid., September 7, 1937.

⁴These "adulterants" are protected in the domestic market and pushed in the world market by the governments concerned and do, in a very real sense, compete with bright tobacco. Thus, the British Empire fosters Empire tobacco. Great Britain imposes an import duty of from \$2.35 to \$2.61 per pound on tobacco and gives Empire tobacco a deduction of approximately \$.50. None-the-less, American tobacco, chiefly bright tobacco, accounted for 214,000,000 pounds of a total United Kingdom import of 272,000,000 pounds in 1936 (News and Observer, November 18, 1934). Southern Rhodesia paid Germany in tobacco for electrical machinery, to the amount of \$14,000,000 in 1937 and anticipates more such deals in the future (Tobacco Markets and Conditions Abroad, September 7, 1937).

Whittlesey as, "the climate of east margins of continents in the lower middle latitudes," by Thornthwaite as "BB'r," and by others as "the humid subtropical climate."¹ They lie, too, entirely within the "Red and Yellow soils" group; and with the exception of the Old Belt, which lies in a region of dominant Cecil soils, the Norfolk Series of soils predominates in all of them.² There is, thus, a broad similarity of climate and soil in the production area. The tobacco plant, however, is very sensitive to slight changes in either climate or soil, and local variations in these elements are sufficient, with slight local variations in cultivating and curing, to divide the bright tobacco region into four generally recognized "belts"--the Old Belt, the New Belt, the South Carolina or Border Belt, and the Georgia Belt (Fig. 1). A fifth or Middle Belt is less definite and constitutes a transition zone between the Old Belt and the New Belt. The Tobacco Section of the Bureau of Agricultural Economics designates the typical tobacco of these several sections by numerals: Old Belt tobacco, Type 11a; New Belt tobacco, Type 12; South Carolina or Border Belt tobacco, Type 13; Georgia Belt tobacco, Type 14; and Middle Belt tobacco, Type 11b.³ In general, the bright tobacco of the Coastal Plain is more nearly white than that of the Piedmont, and the tobacco of the southern growing areas is more nearly white than that of the more northern areas. Mildness in flavor and aroma is associated with lightness of color. There is, however, no sharp line between the several belts. Tobacco grown in one belt often is found on the market of another belt. Yet there is enough local homogeneity to enable a tobacco expert to recognize at a glance tobacco from any one belt, and quite probably to name the community in which it was grown.

Localization of bright tobacco in North Carolina.--The

¹See Wellington D. Jones and Derwent S. Whittlesey, An Introduction to Economic Geography, Vol. I (Chicago: The University of Chicago Press, 1925), Figure 1; C. Warren Thornthwaite, "Climates of North America," Geographical Review, Vol. XXI, map opposite p. 654.

²U. S. Department of Agriculture, Bureau of Chemistry and Soils, Atlas of American Agriculture, Part III, Plate 2 and Plate 5, secs. 8, 9, and 10 (Washington: Government Printing Office, 1935).

³Charles E. Gage, American Tobacco Types, Uses, and Markets, U. S. Department of Agriculture, Circular No. 249 (Washington: U. S. Department of Agriculture, 1933), map at back of pamphlet.

North Carolina part of the Old Belt was established by 1880, as has been said, in the northernmost tier of Piedmont counties and the northern half of the next tier to the south (Figs. 1 and 2). In the ensuing forty years bright tobacco cultivation spread south and east to occupy the east-central Piedmont and the central Coastal Plain counties, with an outlier on the South Carolina border, as shown in Figure 1. The northeastern counties of the State have been avoided by bright tobacco, as have most of the coastal counties and an area running northwest from Wilmington--roughly the valley of the Cape Fear River. Central and south-central Piedmont counties have virtually no bright tobacco, and there is none in the western mountain counties (Figs. 1 and 2).

Geographic Factors Affecting Localization in North Carolina

Distribution of bright tobacco acreage in North Carolina is based largely on climate, soil type, and crop competition. Topography plays a part, but the influence of topography on bright tobacco cultivation is chiefly through its effect on one of the three factors named above. Tobacco farmers do not hesitate to farm steep lands if their soil is suited to bright tobacco. However, such lands when farmed in tobacco soon lose their desirable characteristics and pass out of cultivation. On the other hand, lands so nearly level as to be poorly drained have developed soils unsuited to bright tobacco.¹

Climate.--All four of the North Carolina bright tobacco belts have a moderately wet winter, with rather heavy precipitation in December, January, and February (Table 1). All show a slight decrease in precipitation in early spring. All have heavy summer rains, with the maximum in July and August for the Old Belt and in July for the Middle, New, and Border Belts. All have a relatively dry autumn, with the minimum precipitation for the year in November. The New and Border Belts have heavier summer rains and slightly drier autumns than the Old Belt and Middle Belt. However, tobacco is transplanted to the fields perhaps a month earlier in the New and Border Belts than in the Old and

¹Poorly drained lands in eastern North Carolina are not restricted to stream bottoms. Large swamps called "pocosins" lie on many flat-topped stream divides, as do soils of the poorly drained Portsmouth series.

TABLE 1

AVERAGE MONTHLY PRECIPITATION IN SELECTED NORTH CAROLINA TOWNS^a
(In Inches)

	Month											
	J	F	M	A	M	J	J	A	S	O	N	D
Town:												
Old Belt--												
Reidsville (3) ^b	3.4	3.3	3.8	3.4	3.6	4.6	4.6	4.9	3.2	3.0	2.2	3.7
Roxboro (4)	3.1	4.0	3.7	3.8	4.3	3.5	5.1	4.9	3.3	3.4	2.5	3.1
Saxon (2)	3.2	3.9	3.9	3.3	3.9	5.3	4.4	5.0	3.2	3.1	2.6	3.6
Mt. Airy (1)	3.4	3.6	3.9	3.4	3.9	4.6	5.3	5.1	3.7	3.3	2.6	3.7
Middle Belt--												
Oxford (5)	3.6	3.8	3.8	3.6	3.8	4.2	5.2	4.4	3.8	2.8	2.3	3.1
Henderson (6)	3.4	3.9	4.0	3.8	3.9	4.5	5.5	5.2	3.6	3.3	2.5	3.6
Louisburg (9)	3.4	3.9	3.8	3.5	3.9	4.4	5.6	4.7	3.4	2.8	2.3	3.3
Raleigh (10)	3.3	4.0	3.9	3.4	4.1	4.5	5.3	5.6	3.8	2.9	2.3	3.2
New Belt--												
Rocky Mt. (11)	3.4	4.0	3.5	3.3	3.6	4.5	5.4	4.4	3.9	3.0	2.1	3.6
Greenville (13)	3.5	3.7	3.9	3.7	4.0	5.4	6.4	5.2	5.0	3.2	2.4	3.4
Smithfield (18)	3.6	4.2	4.0	3.6	4.0	4.9	6.3	5.5	4.1	3.0	2.4	3.4
Kinston (14)	3.6	4.0	3.8	3.1	3.8	5.5	6.6	5.4	4.9	2.6	2.2	3.2
Border Belt--												
Lumberton (20)	3.4	4.2	3.7	3.5	4.0	5.4	5.7	5.6	4.6	3.1	2.2	3.3
Non-tobacco Towns--												
Edenton (16)	3.5	4.2	4.0	3.6	4.6	4.8	6.7	5.5	3.9	3.3	2.7	4.0
Charlotte (8)	4.0	4.2	4.2	3.3	3.6	4.2	5.1	5.1	3.0	3.0	2.6	3.9
Fayetteville (19)	3.4	4.0	3.7	3.3	4.2	5.1	6.2	5.8	4.1	2.9	2.2	3.3

^aData from Climatic Summary of the United States, Nos. 95, 96, 97, U. S. Department of Agriculture, Weather Bureau (Washington: Government Printing Office, 1933).

^bNumbers in parentheses refer to locations in Fig. 2.

Middle Belts.¹ Steps in cultivation and stages of maturity in the plants vary correspondingly, and the harvest is perhaps a month earlier in the New and Border Belts than in the Old and Middle Belts. The transplanting season embraces several weeks, however, and in many seasons the end of the transplanting period in the New and Border Belts overlaps the beginning of the transplanting period in the Old and Middle Belts.² The average field growing sea-

¹It will be recalled that tobacco is grown in plant beds until the plants are some six inches high, then transplanted to the field.

²The farmer prefers to transplant his tobacco in various

son for the Old and Middle Belts can be taken as May to September, inclusive, and that of the New and Border Belts as April to August, inclusive. Since, however, the field growing season varies considerably it seems better to study precipitation both for the year and for the average field growing seasons in the several belts.

It is apparent from Table 1 that the rainfall régime in all the growing belts follows the same general pattern. The chief difference is in amount of summer rainfall, the amount increasing with proximity to the sea. Precipitation for the five months of the average field growing season in the several belts shows more marked differences (Table 2). The Old and Middle Belts have a somewhat wetter early growing season and a decidedly drier late growing season than do the New and Border Belts. There is variation from year to year at the several stations, of course; but there also is variation from year to year in the quality of tobacco produced. There is variation, too, from station to station within any one belt; but there also is variation in the quality of tobacco produced by different communities within any one belt. It seems quite possible that the differences in average rainfall noted may partly account, in a plant as sensitive to climate as tobacco, for the differences in the types of bright tobacco grown in the several belts.¹

The several tobacco belts display a very definite similarity in their precipitation régimes. They also display minor variations in these régimes, particularly when account is taken of the differences in the average tobacco growing season of the belts. These differences may well constitute a partial cause of the variation in bright tobacco produced in these belts. The lack of tobacco in the three areas noted as being non-tobacco districts,² however, cannot be attributed to precipitation differences. The rainfall régimes of three stations in the non-tobacco areas--Edenton for the northeast, Fayetteville for the Cape Fear Valley, and Charlotte for the southern Piedmont, fall well within

parts of the farm at intervals of perhaps a week over a period of a month or so. He thus staggers the labor of subsequent operations.

¹Supra, p. 16 for differences in tobacco types.

²Supra, p. 17.

the variations between towns of the tobacco belts (Tables 1 and 2).

TABLE 2

AVERAGE MONTHLY PRECIPITATION IN SELECTED NORTH CAROLINA
TOWNS FOR THE FIVE MONTHS GROWING PERIOD^a
(In Inches)

	1st Month	2d Month	3d Month	4th Month	5th Month
Town:					
Old Belt--					
Reidsville (3) ^b	3.57	4.63	4.61	4.87	3.17
Roxboro (4)	4.27	3.53	5.10	4.93	3.34
Saxon (2)	3.91	5.27	4.40	5.01	3.21
Mt. Airy (1)	3.93	4.63	5.33	5.10	3.65
Middle Belt--					
Oxford (5)	3.82	4.22	5.15	4.35	3.76
Henderson (6)	3.94	4.51	5.49	5.22	3.58
Louisburg (9)	3.92	4.44	5.57	4.66	3.40
Raleigh (10)	4.06	4.47	5.31	5.56	3.78
New Belt--					
Rocky Mt. (11)	3.26	3.62	4.53	5.37	4.41
Greenville (13)	3.65	4.00	5.39	6.38	5.17
Smithfield (18)	3.60	4.01	4.93	6.27	5.46
Kinston (14)	3.08	3.81	5.54	6.61	5.43
Border Belt--					
Lumberton (20)	3.50	3.95	5.44	5.70	5.62
Non-tobacco Towns--					
Edenton (16)	3.58	4.56	4.80	6.66	5.50
Charlotte (8)	3.31	3.63	4.22	5.10	5.07
Fayetteville (19)	3.28	4.19	5.12	6.22	5.75

^aData from Climatic Summary of the United States, Nos. 95, 96, 97.

^bNumbers in parentheses refer to locations in Fig. 2.

From a study of climatic data in the several belts it appears that there is a definite precipitation pattern for bright tobacco areas in general, and that there are variations within this pattern large enough, and characteristic enough of the individual belts, to account, in part at least, for differences in the type of tobacco produced. It seems, however, that bright tobacco has by no means occupied all the area in North Carolina which enjoys one or another of the variations of the bright tobacco rainfall.

A study of the temperature régime in the several belts shows that all of the North Carolina tobacco belts have a marked and steady rise in temperature from a minimum in January to a max-

imum in July, but that the Old Belt and the Middle Belt are consistently somewhat lower in average monthly temperature than the New Belt and Border Belt (Table 3). If the average field-growing

TABLE 3
AVERAGE MONTHLY TEMPERATURES IN SELECTED TOWNS
OF THE NORTH CAROLINA TOBACCO BELTS^a
(Fahrenheit)

	Month											
	J	F	M	A	M	J	J	A	S	O	N	D
Old Belt--												
Reidsville (3) ^b	40	42	50	58	67	74	78	76	71	60	50	41
Roxboro (4)	36	38	49	57	67	74	79	76	71	58	48	40
Saxon (2)	37	38	49	56	66	73	76	75	69	58	47	39
Mt. Airy (1)	37	39	47	55	64	72	75	74	69	57	46	39
Middle Belt--												
Oxford (5)	39	43	50	58	65	74	77	75	72	59	48	41
Henderson (6)	41	41	51	58	68	75	78	77	72	60	50	41
Louisburg (9)	40	42	51	59	68	75	78	77	72	60	49	42
Raleigh (10)	42	43	51	59	68	75	78	77	72	61	51	43
New Belt--												
Tarboro (12)	42	43	52	60	69	76	80	79	73	62	51	43
Greenville (13)	43	45	52	60	69	76	79	78	73	63	52	44
Smithfield (18)	42	43	52	60	69	76	79	78	72	61	51	43
Kinston (14)	45	46	54	61	70	77	80	80	74	63	52	45
Border Belt--												
Lumberton (20)	45	45	54	62	71	77	80	79	74	63	53	45

^aData from Climatic Summary of the United States, Nos. 95, 96, 97.

^bNumbers in parentheses refer to locations in Fig. 2.

months are considered, certain interesting differences are observed (Table 4). It will be noted that the Old Belt and Middle Belt, despite their lower monthly averages, have distinctly warmer weather for the first two growing months than do the New Belt and Border Belt, though their last two growing months are cooler than the corresponding months in the New and Border Belts. It should be noted again that there is a considerable variation in any one belt in the time of transplanting tobacco and in the types of tobacco produced, as well as in temperatures for individual stations or for individual years. However, study of the temperature régimes in the several belts leads one to conclude that there is a characteristic temperature rhythm for the tobacco area as a whole, with definite sub-rhythms for the several belts.

TABLE 4

AVERAGE MONTHLY TEMPERATURES IN SELECTED TOWNS
OF THE NORTH CAROLINA TOBACCO BELTS
FOR THE FIVE MONTHS GROWING PERIOD^a
(Fahrenheit)

	1st Month	2d Month	3d Month	4th Month	5th Month
Old Belt--					
Reidsville (3) ^b	67.1	74.0	77.6	76.4	71.4
Roxboro (4)	67.3	73.6	77.8	76.4	70.6
Saxon (2)	66.0	73.0	76.2	75.3	69.3
Mt. Airy (1)	64.3	71.7	75.0	73.8	68.8
Middle Belt--					
Oxford (5)	65.1	73.8	77.1	75.2	71.6
Henderson (6)	67.6	74.7	78.0	76.8	72.0
Louisburg (9)	67.7	75.1	78.2	77.1	71.7
Raleigh (10)	68.3	75.3	78.3	77.1	71.9
New Belt--					
Tarboro (12)	59.8	69.3	76.4	79.7	78.6
Greenville (13)	59.6	68.6	76.0	79.0	77.7
Smithfield (18)	59.6	68.6	76.0	79.2	78.0
Kinston (14)	60.9	70.4	76.7	80.1	79.5
Border Belt--					
Lumberton (20)	62.0	70.6	77.2	80.1	79.1

^aData from Climatic Summary of the United States, Nos. 95, 96, 97.

^bNumbers in parentheses refer to locations in Fig. 2.

The foregoing consideration of precipitation and temperature does not, however, account for the absence of bright tobacco from the northeastern counties, the Cape Fear Valley, or the Southern Piedmont (Fig. 3). Reference to Tables 5 and 6 will show that stations in the various tobacco belts differ from each other about as much as from stations in these three non-tobacco stations. Reference to Table 7 will show that the non-tobacco coastal area in the southeastern corner of the State has a climate quite similar to that of the Border Belt. Average minimum temperatures, moreover, are nearly identical for non-tobacco Charlotte and Edenton and for several stations in the New and Middle Belts.¹ The average frost-free period is some three weeks longer in the Border Belt than in the Old Belt and it begins some two weeks earlier in

¹See Climatic Summary of the United States, Nos. 95, 96, and 97, U. S. Department of Agriculture, Weather Bureau (Washington: Government Printing Office, 1933).

TABLE 5

SOUTH-CENTRAL AND MIDDLE BELT CLIMATES^a

	Average Temperature				Average Precipitation			
	(8) ^b	(7)	(6)	(10)	(8)	(7)	(6)	(10)
January	41.6	41.3	40.5	41.7	4.00	3.83	3.35	3.25
February	44.0	43.0	41.1	43.1	4.18	4.20	3.89	3.97
March	51.2	51.0	50.5	50.9	4.17	4.64	3.95	3.89
April	59.7	59.6	57.9	59.1	3.31	3.58	3.83	3.40
May	68.9	68.4	67.6	68.3	3.63	4.30	3.94	4.06
June	75.7	75.6	74.7	75.3	4.22	4.60	4.51	4.47
July	78.5	78.7	78.0	78.3	5.10	4.97	5.49	5.31
August	77.1	77.3	76.8	77.1	5.07	5.10	5.22	5.56
September	72.1	71.9	72.0	71.9	2.99	3.42	3.58	3.78
October	61.3	60.3	60.3	60.9	2.95	3.12	3.27	2.91
November	50.8	50.1	49.7	50.9	2.57	2.53	2.47	2.29
December	43.1	42.1	41.2	43.0	3.86	3.84	3.62	3.22

^aData from Climatic Summary of the United States, Nos. 95 and 96.

^bCharlotte (8), Salisbury (7), Henderson (6), Raleigh (10). Charlotte and Salisbury are in the non-tobacco section of the Piedmont. Numbers in parentheses refer to locations in Fig. 2.

TABLE 6

NORTHEASTERN AND NEW BELT CLIMATES^a

	Average Temperature				Average Precipitation			
	(16) ^b	(17)	(15)	(12)	(16)	(17)	(15)	(12)
January	42.7	44.0	45.8	42.1	3.50	4.12	3.74	3.80
February	43.3	44.3	45.3	43.4	4.21	3.98	4.61	4.04
March	51.4	51.0	53.9	51.5	3.96	3.67	4.36	3.86
April	59.0	59.0	59.6	59.8	3.58	3.15	3.20	3.49
May	68.1	67.1	70.7	69.3	4.56	3.96	4.04	4.36
June	75.2	74.4	76.5	76.4	4.80	5.37	6.00	4.54
July	79.4	78.6	80.2	79.7	6.66	5.88	7.15	6.17
August	78.2	77.7	79.9	78.6	5.50	4.34	7.11	5.37
September	72.5	72.8	73.8	73.3	3.91	4.02	4.05	3.49
October	61.8	63.4	63.0	62.0	3.28	2.27	3.53	3.28
November	51.4	52.8	52.6	51.2	2.71	2.46	2.55	2.49
December	43.3	43.9	46.1	43.1	4.01	4.07	3.38	3.71

^aData from Climatic Summary of the United States, No. 97.

^bEdenton (16), Elizabeth City (17), Washington (15), Tarboro (12). Edenton and Elizabeth City are in the northeastern area in which tobacco is of little importance. Tarboro and Washington are in New Belt growing areas. Numbers in parentheses refer to location in Fig. 2.

TABLE 7
SOUTHEASTERN AND BORDER BELT CLIMATES^a

	Average Temperature			Average Precipitation		
	(21) ^b	(20)	(22)	(21)	(20)	(22)
January	47.2	44.8	47.5	3.31	3.35	3.80
February	48.7	45.3	48.9	3.36	4.23	3.97
March	54.7	54.3	54.6	3.29	3.74	3.54
April	61.6	62.0	62.0	2.76	3.50	2.95
May	69.9	70.6	70.8	3.60	3.95	3.31
June	76.4	77.2	77.4	5.17	5.44	4.42
July	79.5	80.1	80.4	6.94	5.70	6.63
August	78.6	79.1	79.7	6.53	5.62	5.66
September	74.1	74.0	75.6	5.22	4.59	4.92
October	64.4	62.9	66.2	3.35	3.14	4.26
November	55.0	52.6	56.6	2.07	2.18	2.66
December	48.3	45.2	49.3	3.04	3.30	3.64

^aData from Climatic Summary of the United States, No. 96.

^bWilmington (21), Lumberton (20), Southport (22). Lumberton is a Border Belt station. The other two are non-tobacco stations. Numbers in parentheses refer to locations in Fig. 2.

TABLE 8
AVERAGE FROST-FREE PERIOD AT SELECTED STATIONS^a

Station	Last Killing Frost	First Killing Frost	Frost-Free Days
Roxboro (4) ^b	April 9	October 26	199
Mt. Airy (1)	April 24	October 15	174
Oxford (5)	April 12	October 26	197
Raleigh (10)	March 27	November 5	223
Smithfield (18)	April 7	October 30	206
Kinston (14)	April 5	November 2	211
Lumberton (20)	March 28	November 5	222
Charlotte ^c (18)	March 25	November 5	225
Edenton ^c (16)	April 3	November 3	214

^aData from Climatic Summary of the United States, Nos. 95, 96, 97.

^bNumbers in parentheses refer to locations in Fig. 2.

^cNon-tobacco stations.

spring (Table 8). The Middle Belt and the New Belt fall between the Old Belt and the Border Belt in length of frost-free season. The non-tobacco stations, Edenton and Charlotte, shown in Table 8 have approximately the frost-free periods of the New Belt and the Border Belt, respectively. Dates of latest killing frost recorded (Table 9) help explain the late transplanting season in the Old Belt and Middle Belt, but they do not explain why tobacco is neglected in the three large non-tobacco areas--the northeastern counties, the southern Piedmont, and the Cape Fear Valley. It seems quite clear that these three areas enjoy climates sufficiently similar to those of the growing belts to enable them, in so far as climate is concerned, to grow bright tobacco.

TABLE 9

LATEST RECORDED KILLING FROST AT SELECTED STATIONS^a

Reidsville (3) ^b	May 10
Roxboro (4)	Apr. 24
Mt. Airy (1)	May 27
Oxford (5)	Apr. 25
Louisburg (9)	Apr. 30
Raleigh (10)	Apr. 26
Greenville (13)	May 6
Smithfield (18)	Apr. 30
Kinston (14)	Apr. 26
Lumberton (20)	Apr. 21
Charlotte ^c (8)	Apr. 26
Edenton ^c (16)	Apr. 26

^aData from Climatic Summary of the United States, Nos. 95, 96, 97.

^bNumbers in parentheses refer to locations in Fig. 2.

^cNon-tobacco stations.

Soils.--Distribution of bright tobacco acreage in North Carolina coincides closely with the distribution of certain soil types. These soils are alike in that all of them are sandy, low in content of soluble plant foods, and low in content of organic matter. There is a considerable difference between belts, however, in the specific type of sandy soil used for tobacco, and the tobacco belts by no means include all areas of soils suited to bright tobacco production. The general agreement of tobacco distribution with distribution of tobacco soils can be seen by

comparing Figure 3 with Figure 4--as well as certain striking discrepancies. Since the soil map and the acreage map are somewhat generalized,¹ they were supplemented by road traverses made by the writer in each of the four belts of the State in the summer of 1938.² The several belts will be considered separately,

¹The acreage map (Fig. 3) is based on statistics supplied by the North Carolina Department of Agriculture. These statistics give an accurate statement of acreage by counties and an estimate of acreage by townships within the counties. The distribution within counties is based on estimates and is not accurate. The distribution by counties is accurate. The soils map is after one prepared by the Department of Soils of the Raleigh Unit of the University of North Carolina. It is considerably generalized, particularly in the Piedmont.

²In making this traverse, the writer used a car with an accurate speedometer, and a driver. He followed traditional practice in assigning symbols to the various crops, woodland, and farmsteads which occur along the roads, tobacco being assigned the figure "8." Land occupation on the right hand of the roads traversed was recorded in units of a tenth of a mile on strips of graph paper, each square of the paper representing a tenth of a mile. The record was begun at some point on the road which could easily be identified on a map, a creek crossing, for example. From this point, symbols for land occupation were set down in a column running from top to bottom of the sheet and continued on similar sheets numbered consecutively for each traverse. (See sample strip at left.) The record strips were correlated in the office with soil types as shown on large scale county soil maps. The starting point of the traverse was located on the map and the soil type at that point identified. A sheet of paper was then headed with the name of this soil type, as Durham sandy loam. Next the road mileage on this soil type from the starting point to the point at which the road left this soil was measured with compasses and read on the scale of miles. This mileage was then bracketed on the graph record and the soil type noted there. (See sample strip at left.) This road mileage and the number of tenths of miles of tobacco frontage noted on it were then set down on the sheet headed by the name of the soil type. (For the sample strip at the left the first entry would be, on the sheet headed Durham sandy loam: Mileage--2.0, Tobacco frontage--0.3.) Then the road mileage on the next soil type was measured and recorded in similar fashion. Finally, the entries of road mileage and tobacco frontage for each soil type were totalled, by belts, and the totals set in tabular form.

2	FISHING
2	CREEK
2	
8	
2	
8	
8	
3	
10	
8	
8	BSL.
8	
10	
2	
2	
2	
2	
2	
2	
2	
2	TABBS
2	CREEK
2	DFSL.
8	
8	
2	CCL.

using both the generalized maps and the more detailed road traverse records, to show the general and detailed relationship of tobacco acreage to local soils.

Old Belt tobacco acreage lies mainly in the northernmost tier of counties and the northern half of the next tier to the south, extending from the foothills of the Blue Ridge (Shown in Fig. 4 as non-tobacco soil) eastward to about a north-south line passing through Durham (Fig. 3). This acreage, from west to east, is on Cecil loams (C in Fig. 4), Durham and Appling loams (D), and, at its eastern end, Alamance and Georgeville loams (A). These three soil groups are classified as tobacco soils, since they contain the sandy, infertile, loams preferred for the crop. The Alamance and Georgeville group, however, are secondary tobacco soils, embracing relatively large areas of heavy soils unsuited to tobacco. Both the Alamance-Georgeville group and the Cecil group extend to the southwest far beyond the tobacco belts. The fact that these tobacco soils are not used for tobacco in the southern North Carolina Piedmont will be discussed later.

The road traverse records for the Old Belt give a more detailed statement of tobacco occupancy of various soils.¹ A total road frontage of 243.5 miles was traversed in the Old Belt, and a total tobacco frontage of 16.3 miles on the right-hand side of the road was recorded (Table 10). Of this total frontage, 60 per cent was on sandy loam soils and 40 per cent on other types of soil. The total mileage of tobacco recorded was approximately six and a half per cent of the total frontage. This seemingly low percentage is actually very high if only cultivated land is considered. The Old Belt is very largely forested. Eighty-four per cent of the tobacco frontage recorded was on sandy loam soils, though these soils made up only 60 per cent of the total frontage traversed, and 16 per cent of the tobacco was on the remaining 40 per cent of the total traverse frontage. Cecil, Appling, White Store, and Durham sandy loams carried 60 per cent of the total observed tobacco frontage.

¹These traverse records are subject to error, and are to be taken as indicating, rather than as stating accurately, the tobacco occupancy on various soils. The county soil maps upon which they depend are somewhat generalized. Roads have been changed since the maps were compiled, and, while major road changes could be recognized and records on such roads thrown out, slight road changes may have escaped notice.

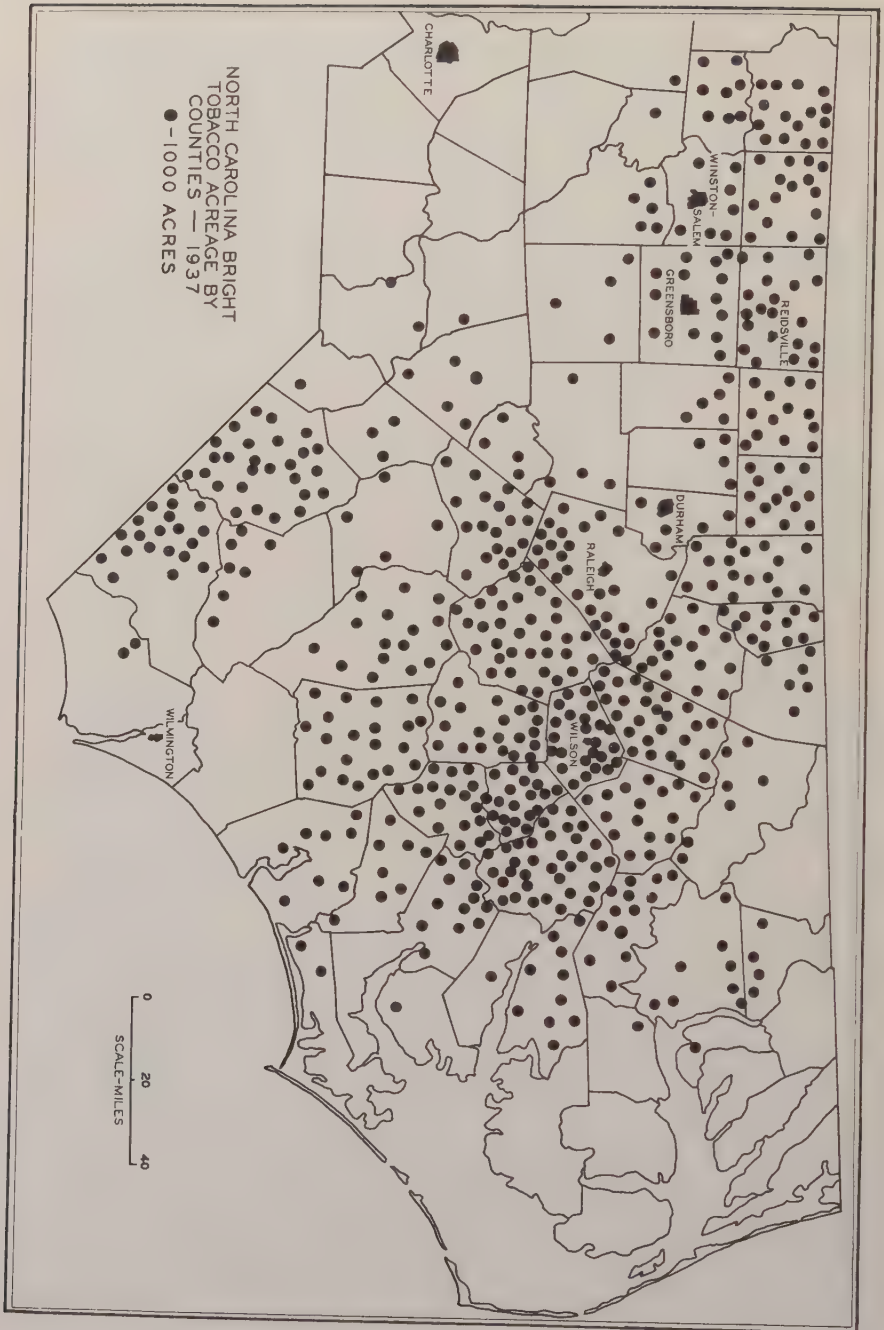


Fig. 3.--North Carolina bright tobacco acreage, by counties, 1937

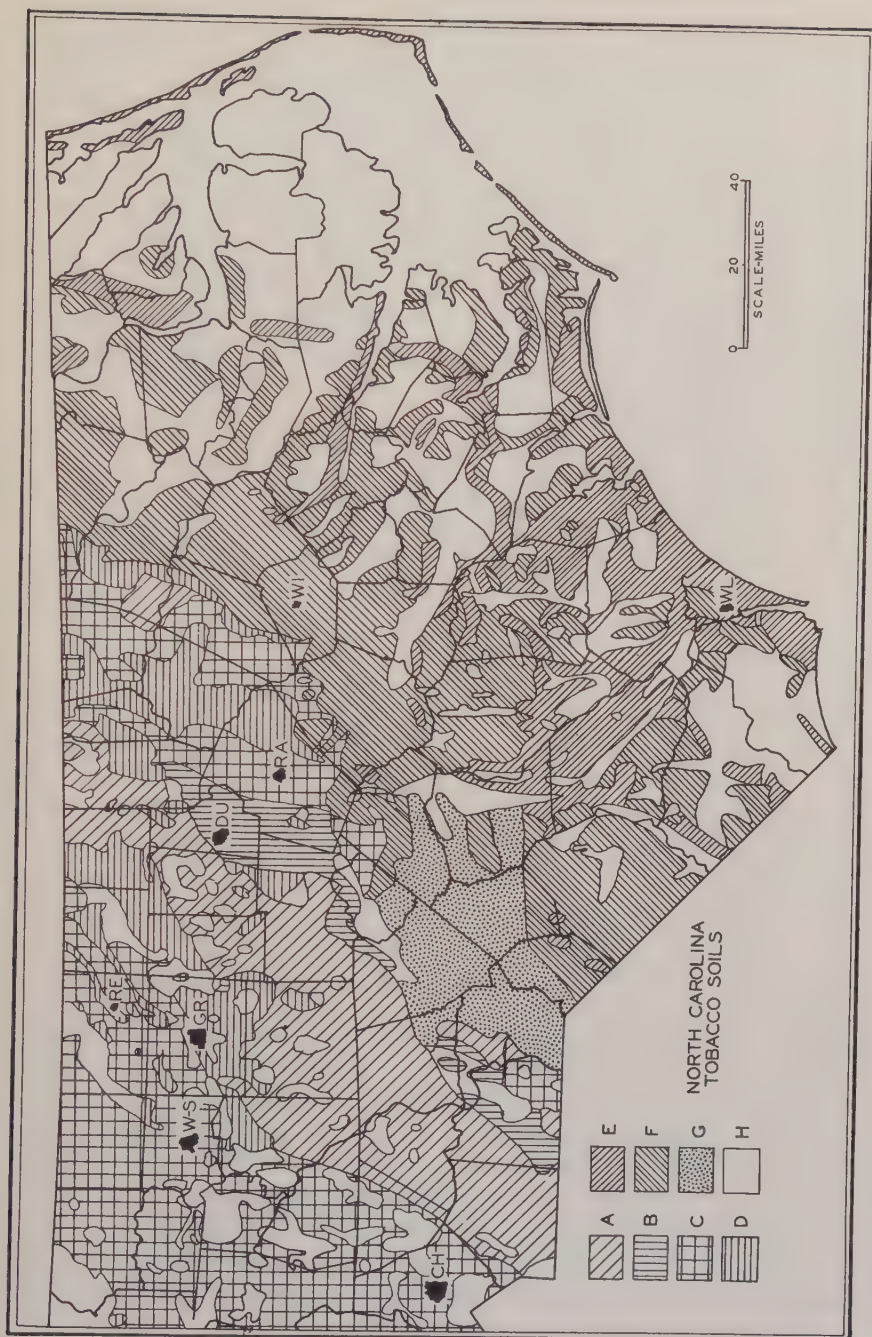


Fig. 4.--North Carolina bright tobacco soils

TABLE 10

ROAD FRONTAGE OF TOBACCO IN THE
OLD BELT BY SOIL TYPES

Soil Type	Road Frontage (Miles)	Tobacco Frontage (Miles)
Cecil Sandy Loams	56.8	6.1
Appling Sandy Loams	14.8	2.4
Wilkes Sandy Loams	8.5	.4
Wadesboro Sandy Loams	1.8	.0
White Store Sandy Loams	24.1	2.0
Durham Sandy Loams	18.8	1.5
Congaree Sandy Loams	.3	.0
Iredell Sandy Loams	12.3	.6
Helena Sandy Loams	1.4	.0
Caswell Sandy Loams	3.6	.6
Granville Sandy Loams	1.7	.1
Altavista Sandy Loams	.2	.0
Georgeville Sandy Loams	1.0	.0
Total Sandy Loams	145.3	13.7
Cecil Clay Loams	8.9	.2
Congaree Silt Loams	1.5	.0
Penn Silt Loams	1.0	.1
Iredell Loams	9.2	.2
Mecklenburg Loam	1.6	.0
Davidson Clay Loam	1.9	.0
Orange Silt Loam	1.0	.1
Alamance Silt Loam	4.8	.4
Cecil Clay	7.0	.2
Georgeville Silt Loams	33.7	.5
Conowingo Silt Loams	10.5	.9
Davidson Clay Loams	17.1	.0
Total Soils Other Than Sandy Loams	98.2	2.6
Total	243.5	16.3

The Middle Belt shows its transitional nature in the soils used for tobacco cultivation. This belt spans the three border counties east of the Old Belt, then runs southwestward between Durham and Raleigh to include a scattered acreage reaching almost the South Carolina line (Fig. 3). Its soils, from north to south, are, first, Alamance and Georgeville (A), Durham and Appling (D), and Cecil (C) groups (Fig. 4). Between Raleigh and Durham, it occupies Cecil (C), and White Store and Granville (B) groups. Farther south, there is a considerable body of Norfolk sandy loam

(F), and there is a scattered acreage on the Sand Hill type of Norfolk sand (G). A small area of Cecil (C) and White Store (B) soils west of the Sand Hill section is unoccupied by tobacco, though both are excellent tobacco soils.

The traverse record shows sandy loams along more than 74 per cent of the 180.6 miles of road traversed in the Middle Belt (Table 11). This 74 per cent of the road frontage carried 90 per cent of the observed tobacco frontage of 19.3 miles in 1938, while the 24.6 per cent in loams and clay and silt loams carried only 7 per cent of the total tobacco frontage, and a small frontage of Norfolk sands showed a very high proportion of tobacco.

TABLE 11
ROAD FRONTAGE OF TOBACCO IN THE
MIDDLE BELT BY SOIL TYPES

Soil Type	Road Frontage (Miles)	Tobacco Frontage (Miles)
Ruston Sandy Loams	17.4	2.3
Appling Sandy Loams	22.6	2.4
Cecil Sandy Loams	14.5	.8
Wilkes Sandy Loams	2.6	.4
Durham Sandy Loams	25.4	4.2
Iredell Sandy Loams	2.3	.0
Norfolk Sandy Loams	21.0	4.0
Marlboro Sandy Loams	1.4	.2
Bradley Sandy Loams	.1	.1
Altavista Sandy Loams	.1	.0
Granville Sandy Loams	26.7	3.1
Total Sandy Loams	134.1	17.5
Norfolk Sands	2.8	.5
Davidson Clay Loam	.1	.0
Norfolk Silt Loams	.6	.1
Cecil Clay Loams	35.1	1.2
Iredell Loams	.5	.0
Granville Silt Loams	5.5	.0
Georgeville Silt Loam	1.1	.0
Iredell Clay Loam	.8	.0
Total Loams and Clay and Silt Loams	43.7	1.3
Total	180.6	19.3

The New Belt grows tobacco chiefly on Norfolk sandy loams, with a considerable acreage on Norfolk sands. Tobacco acreage is concentrated in the counties surrounding Wilson (Fig. 3). Outlying areas of scattered acreage surround these counties, and islands and ribbons of production extend the New Belt eastward almost to the sea and southward to the Cape Fear Valley. Northward, the belt ends considerably to the south of the Virginia line. At its northern end, this belt (Fig. 4) uses Cecil (C), Durham and Appling (D), and Alamance and Georgeville (A) soils, as well as Norfolk sandy loams (F). Its greatest concentration of tobacco acreage, and most of its scattered acreage to the east and south, is in sections predominantly of Norfolk sandy loams (F) and Norfolk sands (E). Large areas of these two excellent tobacco soils are, however, left unoccupied by tobacco, particularly to the north, near the coast, and in the Cape Fear Valley.

Traverse records of 374.6 miles in the New Belt show a preponderance of sandy loams. Eighty-one per cent of the total observed frontage was in sandy loams, and almost half of the total in Norfolk sandy loams alone. Approximately two-thirds of the total tobacco frontage observed in the New Belt was on Norfolk sandy loams, and approximately 10 per cent on Norfolk sands (Table 12). Virtually all of the tobacco in this belt is on one or another of the sandy loams or sands.

Most of the Border Belt tobacco acreage is on Norfolk sandy loams and Norfolk sands, as is that of the New Belt, but the two soils reverse their order of importance and the sands become the more important tobacco soil in the Border Belt. This belt is represented in North Carolina by a compact group of counties near the southeastern corner of the State (Fig. 3). Most of the soil here is either Norfolk sandy loam or Norfolk sand, but there are large swamps and considerable areas of poorly drained land unsuited to tobacco (Fig. 4).

The traverse record brings out the prominence of the two Norfolk groups in the Border Belt (Table 13). Of the 43.7 miles traversed, over half was in Norfolk sands and this half bore over half of the tobacco frontage recorded. Well over a third of the total frontage was in Norfolk sandy loams, and it bore nearly half of the tobacco acreage. The Portsmouth sandy loams are more prominent in the general area than indicated by the traverse record, for the traverse was made in the tobacco growing section.

TABLE 12

ROAD FRONTAGE OF TOBACCO IN THE
NEW BELT BY SOIL TYPES

Soil Type	Road Frontage (Miles)	Tobacco Frontage (Miles)
Norfolk Sandy Loams	175.4	42.8
Cecil Sandy Loams	23.3	.8
Dunbar Sandy Loams	19.2	2.3
Ruston Sandy Loams	17.8	2.3
Portsmouth Sandy Loams	10.9	1.5
Kalmia Sandy Loams	10.5	3.3
Marlboro Sandy Loams	7.5	1.4
Orangeburg Sandy Loams	4.4	.5
Cuthbert Sandy Loams	4.6	.1
Appling Sandy Loams	4.1	.0
Wickham Sandy Loams	4.0	.4
Bradley Sandy Loams	3.7	.6
Cahaba Sandy Loams	3.0	.1
Other Sandy Loams	14.6	.9
Total Sandy Loams	303.0	57.9
Norfolk Sands	50.4	7.4
Kalmia Sands	2.2	.5
Ruston Sands	2.0	.0
Other Sands	.9	.0
Total Sands	55.5	7.9
Portsmouth Loams	6.4	.2
Okenee Loams	1.1	.3
Norfolk Silt Loams	1.3	.2
Georgeville Silt Loams	2.2	.0
Cecil Clay Loam	2.0	.0
Coxville Silt Loam	1.0	.0
Other Silt Loams	1.5	.0
Other Loams	.6	.0
Total Loams, Clay, and Silt Loams	16.1	.7
Total	374.6	66.5

Very little tobacco is to be found on the peaty, poorly drained Portsmouth series.

A summary of all the traverses in all four belts supports the impression gained by comparing Figures 3 and 4, namely, that distribution of tobacco acreage agrees in general with distribution of tobacco soils. It shows, further, that in all the belts

tobacco acreage is predominantly on sandy loams or sands. Almost 16 per cent of the total observed frontage of sandy loams was in tobacco in 1938, and over 17 per cent of the observed frontage of sands, while only approximately 3 per cent of the observed frontage in other soil types bore tobacco. It shows, too, that sandy loams are the dominant soils of the tobacco belts, with 71 per cent of the total observed road frontage.

TABLE 13
ROAD FRONTAGE OF TOBACCO IN THE
BORDER BELT BY SOIL TYPES

Soil Type	Road Frontage (Miles)	Tobacco Frontage (Miles)
Norfolk Sandy Loams	16.2	4.8
Norfolk Sands	23.8	5.9
Portsmouth Sandy Loams	3.7	.5
Total	43.7	11.2

The traverse record, with the acreage map and the soil map, show conclusively that bright tobacco is found chiefly on two general soil types--the sandy loam or sand. They show, too, that while bright tobacco in the several belts occupies soils within this general classification, yet the soils are sufficiently different from one belt to another, and sufficiently homogeneous within any one belt to warrant the assumption that there exists a causal relation between soil variation and variation in the types of bright tobacco produced by the four belts.¹

It remains to consider the several considerable areas of tobacco soils in North Carolina which have not yet adopted bright tobacco as an important money crop.

It appears probable that a preponderance of non-tobacco soils in an area, or isolation of tobacco soils from large areas of such soils, operates against tobacco production even on highly suitable soils. A glance at Figure 4 will show that both these

¹For the chemical composition of Norfolk sandy loam, see Atlas of American Agriculture, Part III, p. 47, and for the Chemical composition of Cecil fine sandy loam, see p. 54 of the same work.

factors are present in the northeastern non-tobacco counties except for a large area of Norfolk sandy loam ("F" in Fig. 4) on the Virginia border north of the New Belt. Both operate in the mid-coastal counties and, to a degree in the Cape Fear Valley. The isolation of the small area of tobacco soils ("B" and "C" in Fig. 4) west of the Sand Hills ("G" in Fig. 4) is obvious. Neither of these factors is so apparent in the Cecil soils area of the southern Piedmont ("C" in Fig. 4). Both are present, however. A spur of the Blue Ridge, the Brushy Mountains, projects eastward toward Winston-Salem and almost completely separates the Old Belt from the Cecil soils to the south. (See blank areas southwest of Winston-Salem in Fig. 4.) Heavy slate-derived soils ("E" in Fig. 3) cut these Cecil soils off from the eastern tobacco soils. Within the area designated as predominantly Cecil in type the sandy loams are decidedly in the minority, as will be seen from the table below, comparing Old Belt Caswell County with non-tobacco Mecklenburg County. (Charlotte is the county seat of Mecklenburg County. Caswell is east of the county containing Reidsville, Fig. 4.)

TABLE 14
THE SOILS OF MECKLENBURG AND CASWELL COUNTIES*

Soil	Mecklenburg (Per Cent)	Caswell (Per Cent)
Cecil Sandy Loam	25.9	38.8
Iredell Sandy Loam	5.0	22.6
Caswell Sandy Loam	...	15.2
Durham Sandy Loam	2.2	10.7
Cecil Clay	11.3	5.9
Cecil Clay Loam	37.7	...
Meadow	4.7	5.3
Iredell Loam	4.2	...
Mecklenburg Clay Loam	4.0	...
Cecil Coarse Stony Loam	2.0	...
Mecklenburg Loam	1.7	...
Congaree Loams	.9	1.4
Alamance Silt Loam	.4	...
Herndon Stony Loam	...	.1

*Data from Soil Survey of Caswell County, North Carolina and Soil Survey of Mecklenburg County, North Carolina, U. S. Department of Agriculture, Bureau of Soils.

It will be observed that Mecklenburg County soils are heavy, with only 33.1 per cent sandy loam soils, while 87.3 per cent of Caswell County soils are classified as sandy loams. Cleveland County, adjoining Mecklenburg on the west, shows only about 25 per cent of its area sandy loam.¹ It is quite probable that the dominance of other soils in this area discouraged tobacco cultivation even on soils suited to it. Bright tobacco has communal aspects in its cultivation. It requires a market for convenient sale of the crop--and the market comes only when the countryside is already producing tobacco in considerable quantity. It is an art, and one passed on by personal contact rather than by written directions--therefore, a break in tobacco soils would be likely to halt the spread of the art. Further, farmers tend to produce what their neighbors produce, and it is a strong-minded farmer who departs very far from the community organization. It seems quite probable that the predominance of non-tobacco soils in the southern Piedmont is largely responsible for the fact that tobacco soils are not used there for tobacco production. Crop competition, discussed below, could be very strongly influenced by the soils pattern of this area. In similar fashion, the predominant, poorly-drained soils of the northeastern counties and of the counties immediately along the coast in general² would operate to bar bright tobacco from the small areas of Norfolk soil which occur there. Competition of other crops, better adapted than tobacco to poor drainage, has set the farm pattern for these counties, and few farmers deviate from it, even where soils permit such deviation.

Crop competition--Crop competition must be considered in explaining the dearth of tobacco in three non-tobacco areas of North Carolina--the northeastern counties, the counties of the southern Piedmont, and the Cape Fear Valley counties (Fig. 3). Dominant soil types unsuited to tobacco, associated in extreme eastern counties with the poor drainage abhorrent to tobacco,

¹U. S. Department of Agriculture, Bureau of Soils, Soil Survey of Cleveland County, North Carolina.

²See Fig. 4, and Atlas of American Agriculture, Part III, Plate 5, Series 8. The soils of these counties are Plummer, Coxville, Portsmouth, Myatt, Meadow, Swamp, etc. They are immature soils, without definite profile development: see Soil Survey of Greene County, North Carolina.

offer a partial explanation. However, this explanation is not entirely adequate, for it appears that these three non-tobacco sections could produce bright tobacco in considerable quantities. Crop-competition is a powerful factor in these sections--crop-competition in which bright tobacco as a possible minority crop loses its potential acreages to a majority crop well enough suited to the dominant soils to set the agricultural pattern of the community.

The northeastern counties which now produce but little bright tobacco embrace the old "Albemarle" tobacco section of colonial days and continue to produce small amounts of good tobacco. There is one market in this section (Fig. 13) supported by the area under discussion. Emporia, just across the line in Virginia, supported a market in 1919 and 1920 in which an excellent grade of Type 12 tobacco was sold.¹ The tobacco tradition is not strong, however. The North Carolina market mentioned is a small one and the community which grew tobacco for the Emporia market abandoned tobacco at the first decline in prices, leaving its new barns unused and returning to the major preoccupation of the section--peanuts. Peanuts and cotton, after the Civil War, met the need of this area for a money crop requiring little hand labor.² The autumn rainfall is too heavy for cotton, and peanuts have tended to win the race between these two crops, while between them they have almost eliminated tobacco. Truck, too, is important in this section, particularly potatoes. Proximity to the Norfolk truck center and the Suffolk peanut center doubtless affected the spread of these crops, but both are well suited to the Portsmouth soils with their high organic content. This organic content is dangerous in bright tobacco farming, and, further, peanut cultivation adds nitrogen to the soil and can, therefore, be followed by tobacco only at serious risk. The farmers of the peanut country say that a field once cultivated in peanuts is ruined for tobacco for the next seven years.³ Peanut and truck farmers and dealers have a complete organization for those

¹J. W. Swift, tobacco exporter, Goldsboro, N.C., and B. M. Garner, Postmaster at Emporia, Va.

²Soil Survey of Northampton County, North Carolina.

³Reported by J. C. Barnes, farmer, of Bertie County.

crops, with markets, organized trade channels, and a populace trained in their production. The northeastern counties have been loyal to peanuts and truck despite low prices in recent years. They have made conscious efforts recently to diversify their crops, but their effort has been toward stock and subsistence, rather than toward tobacco.¹

The southern half of the North Carolina Piedmont is cotton country. This area lies within the isotherm of 77 degrees, Fahrenheit, average summer temperature set by Baker as the northern limit of cotton.² It has, too, as has been pointed out, "strong" dominant soils. "Strong" soils are excellent for cotton, and they are likely to produce a low grade of tobacco. Tobacco is a heavy feeder, ready to absorb whatever food is available. Hence, where it has free access to a generous and uncontrolled supply of nitrates, phosphates, potassium compounds, and other soluble minerals, it partakes so heavily as to produce a heavy, possibly dark, coarse leaf, with burning qualities, taste and aroma undesirable in bright tobacco. It is for this reason that the tobacco farmer avoids legumes, is sparing with manure, and leaves his "stronger" farm lands to other crops. He prefers for his tobacco an almost sterile soil, loose and well-drained, to which he can add plant foods in proper proportions, much as in the recently publicized sand-farming, alleged to be a discovery of the laboratory but actually an established practice of "dirt farmers" in North Carolina for some 60 years past.

Early agriculture in the southern Piedmont counties was of the subsistence type characteristic of the frontier, with animal products as the chief money crop. Cotton was important in Mecklenburg County as early as 1782 and became the chief money crop of the general area after the development of the cotton gin. Subsistence crops continued to occupy much of the farm land, and very small quantities of tobacco were produced as a part of the subsistence economy. Cotton came to be more important after the

¹Numerous articles, appearing weekly in the News and Observer and other newspapers catering to the Coastal Plain counties, written by farm agents, stress this trend and urge stock raising and soy bean cultivation in a definite effort to diversify crops and produce a "live at home" farm economy.

²O. E. Baker, Economic Geography, Vol. III (1927), p. 65. This area has the 200 frost-free days of the cotton climate, as well.

Civil War, with the general breakdown of plantation economy and the urgent need for a money crop demanding as small an expenditure of hand labor as possible.¹ By 1879, when tobacco was spreading across the northern Piedmont, and beginning to compete with cotton and peanuts for the farm lands of the northern Coastal Plain, this section was definitely wedded to a cotton economy. Its labor knew cotton; its merchants and bankers knew cotton; its gins were established; its markets and trade channels were organized for cotton. It had adopted cotton and was not, as was the northern Piedmont, searching for a money crop. Cleveland County and Mecklenburg County, in the southern Piedmont had 22 per cent and 31 per cent, respectively, of their cultivated land in cotton in 1879, while Caswell County and Rockingham County, of the northern Piedmont, had approximately a tenth of one per cent each in cotton, and the neighboring Piedmont counties of Surry and Person had no recorded cotton acreage at all.²

Obviously, the northern Piedmont was ready for bright tobacco not only in its soil types and climate but in its economic situation. Obviously, too, the southern Piedmont was absorbed in cotton soon after the Civil War and in no mood to seek out relatively small areas of farm land suitable for bright tobacco.

One other non-tobacco section remains to be considered. The valley of the Cape Fear River to the northwest of Wilmington shows as a non-tobacco area on the production map (Fig. 3). The dominant soils of this irregular "V" of non-tobacco area between the New Belt and the Border Belt are sands, poorly drained.³ Such soils are unsuited to bright tobacco, as has been stated, and their dominance would be sufficient explanation of the absence of the crop. A part of this area has specialized in truck crops.

Tobacco Acreage Within the Tobacco Belts

Relatively small acreage.--In the tobacco growing counties, tobacco occupies only a fraction of the land area. In the

¹Soil Survey of Cleveland County, North Carolina, Soil Survey of Mecklenburg County, North Carolina, and Soil Survey of Davidson County, North Carolina.

²Killebrew, op. cit., pp. 3 f.

³Atlas of American Agriculture, Part III, Plate 5, sec. 8 and Plate 6.

State as a whole, the tobacco acreage is a surprisingly small percentage of the total area--less than 2 per cent. Only about 20,000,000 acres of North Carolina's more than 33,000,000 acres are in farms, and of the land in farms only about 7,000,000 acres are classified as crop land in the Fifteenth Census (1930). Tobacco ranks fourth in the State in occupance of this crop land, using in 1936 less than 600,000 acres. The acreage of the chief North Carolina crops in 1936 is shown in Table 15.

TABLE 15
ACREAGES OF CHIEF NORTH CAROLINA CROPS IN 1936^a

Crop	Acreage	Approximate Percentage ^b
Corn	2,350,000	38.0
Cotton	957,000	15.5
Tame Hay	890,000	14.5
Tobacco ^c	597,000	9.7
Wheat	530,000	8.5
Oats	245,000	4.0
Peanuts ^d	228,000	3.7
Soy Beans ^d	118,000	2.0
Sweet Potatoes	84,000	1.3
Potatoes	82,000	1.3
Cowpeas ^d	55,000	1.0
Sorghum	18,000	.3
Barley	9,000	.2
Buckwheat	4,000	.1
Total	6,167,000	100.1

^aData from North Carolina Farm Forecaster, Nov., 1937 (Published by the U. S. and North Carolina Departments of Agriculture).

^bApproximate percentages of the total acreage for the fourteen crops listed, not of total cultivated land.

^cTobacco acreage includes 6,000 acres of Burley grown in the mountain counties.

^dThe legumes are listed only where grown for peas or beans.

There has been a steady increase from decade to decade in tobacco acreage and in the percentage of improved land occupied by tobacco (Table 16), though there have been fluctuations from year to year, with recessions as well as progressions.

The percentage of improved land occupied by tobacco is

TABLE 16

TOBACCO OCCUPANCE IN NORTH CAROLINA BY DECADES*

Year	Acreage	Per Cent of Improved Land
1879	57,208	0.9
1889	97,077	1.2
1899	203,023	2.4
1909	221,891	2.5
1919	459,011	5.6
1929	759,000	10.8

*Statistics for years 1879-1919 from the Fourteenth Census of the United States: 1920, Vol. V; for 1929 from Yearbook of Agriculture, 1931. Burley acreage is not included.

much higher in certain counties than in the State as a whole, reaching 25 per cent in several of the New Belt counties. Even in the great tobacco counties, however, tobacco is far from occupying all the area, or even all the area of so-called tobacco soils (Table 17). Even the most favored tobacco soils are by no means entirely devoted to tobacco.

TABLE 17

TOBACCO SOILS AND TOBACCO ACREAGES
IN SELECTED COUNTIES*
1936

County	Soil	Acres	County Tobacco Acreage
Wilson	Norfolk Sandy Loams	105,216	22,381
Wilson	Norfolk Sands	7,936	
Greene	Norfolk Sandy Loams	64,896	17,126
Greene	Norfolk Sands	10,624	
Pitt	Norfolk Sandy Loams	209,280	34,061
Robeson	Norfolk Sandy Loams	429,952	24,822
Caswell	Cecil Sandy Loams	99,200	11,743
Total		927,104	110,133

*Statistics as to soils from the several county soil surveys. Tobacco acreages from the Farm Forecaster, November, 1937.

It will be observed that the five counties listed above (Table 17), while they contained approximately a fifth of the tobacco acreage of the State, could have accommodated more than the total State tobacco acreage on favorite tobacco soil types. Much of the land classified as suitable for tobacco is, of course, actually unsuitable. It has been exhausted and abandoned, or it is too steep, or it contains areas of other soils too small to be shown. Much of the soil suited to tobacco is in needed forest. Much of it is in other crops, even in the tobacco counties, for in all North Carolina there is a strong subsistence phase in agriculture and in many counties there are competing money crops as well.

TABLE 18
PRINCIPAL CROPS IN SELECTED COUNTIES FOR STATED YEARS^a

County	Crop	Acreage to Nearest 1,000 (000 Omitted)					
		1879	1889	1899	1909	1919	1936
Person (Old Belt)	Corn	19	19	21	21	21	21
	Wheat	9	10	10	5	8	6
	Oats	10	7	5	1	1	2
	Tobacco	6	7	9	12	18	13
Total		44	43	45	39	48	42
Wake (Middle Belt)	Corn	53	48	..	52	49	43
	Cotton	60	57	49	49	39	20
	Wheat	15	12	..	3	5	5
	Tobacco	..	1	6	8	20	23
Total		128	118	.. ^b	112	113	91
Wilson (New Belt)	Corn	27	30	37	30	32	37
	Cotton	24	33	19	33	32	17
	Wheat	3	2	1	..	1	..
	Tobacco	..	..	9	11	21	22
Total		54	65	66	74	86	76

^aStatistics from the several censuses and from the several county soil surveys.

^bNeither the Census of 1900 nor the Soil Survey of Wake County gives statistics as to county production of wheat and corn for the year 1899.

It will be noted that in the three counties of Table 18 corn holds its relative importance through 57 years. Wheat, oats,

and cotton decline. It seems probable that tobacco has gained acreage partly at the expense of these crops.

Fluctuations in acreage.--There is a considerable variation of tobacco acreage from year to year within the tobacco counties. A careful study by J. B. Hutson,¹ shows that, while there has been a general advance in tobacco acreage, there has been also an occasional reduction, sometimes a severe reduction, for one or more years. Thus, the tobacco acreage of 1929 was approximately three times that of 1909, but in six of the intervening 20 years there was a reduction from the acreage of the year before and several years showed increases of as much as 15 per cent over the acreages of preceding years. Hutson found that the principal factor in annual changes in acreage was the price of tobacco for the preceding year, and that the price of tobacco for the year before the preceding one had about half the influence of the price in the preceding year. He found the Old Belt more conservative than the newer belts, partly because the Old Belt has no alternative money crop, and partly because of the long tobacco tradition in the Piedmont border counties. Another investigator found by elaborate statistical study² that the price of tobacco is primarily concomitant to the relationship between the stocks of tobacco on hand and the current demand for tobacco--that is, upon supply as related to demand. The operation of this economic principle is obscured, however, by the fact that cigarette tobacco is held in storage for from six months to three years before it is manufactured. Hutson found that demand, as measured by annual disappearance of bright tobacco, increased at an annual rate of about 5 per cent from 1915 to 1930. For the decade 1919-1929, this annual increase in demand would total about a 55 per cent increase. During this decade, the actual increase in acreage in tobacco in North Carolina was from 459,011 acres to 685,074 acres³--an increase of approximately 50 per cent. It appears that North Carolina tobacco farmers have not pressed too heavily

¹J. B. Hutson, "Factors Affecting the Acreage of Flue-cured Tobacco," U. S. Department of Agriculture (Washington: Government Printing Office, 1930). Mr. Hutson is Senior Agricultural Economist of the Department of Agriculture.

²T. J. Woofter, Jr., The Plight of Cigarette Tobacco (Chapel Hill: University of North Carolina Press, 1931).

³This acreage includes all tobacco in North Carolina. Possibly 5 per cent of it is burley.

upon an increasing market. Unfortunately for the North Carolina tobacco farmers, however, large acreages of bright tobacco were added in states farther south. The more southern states produce a different type of tobacco, on the whole, but it is bright tobacco and it is in more or less direct competition with the North Carolina types. The increase in total acreage and production of bright tobacco has been sufficient to cause grave concern among farm leaders.

It will be observed that the increase in tobacco acreage in the states listed in Table 19 has been considerably more rapid than the assumed 5 per cent increase in demand. Particularly disquieting to tobacco growers has been and is the tendency of South Carolina and Georgia cotton farmers to turn to tobacco.

TABLE 19
TOBACCO ACREAGE IN STATED YEARS BY STATES^a

Year	N.C.	S.C.	Ga.
1879	57,208	169	971
1889	97,077	394	800
1899	203,023	25,993	2,304
1909	221,891	30,082	2,025
1919	459,011	103,496	25,067
1929 ^b	759,000	112,852	90,170

^aU. S. Bureau of the Census, Fifteenth Census of the United States: 1930. Agriculture, Vol. IV. Statistics for Virginia are not given because several types of tobacco are grown in the State. There is no separation of types for earlier years. It seems probable that little tobacco other than bright tobacco is included in the statistics above.

^bFrom Yearbook of Agriculture, 1931.

Attempts to Control Bright Tobacco Production

Early laissez-faire.--Bright tobacco farmers, despite the rapid spread of the crop, made no decided attempt at acreage control until 1920. Bright tobacco acreage seems to have increased for many years at about the rate of increase in consumption, and the bright tobacco farmer seems to have been fairly content with his lot during the latter half of the nineteenth century. Besides, the southern farmer, particularly perhaps the North Caro-

lina farmer, is an individualist, strongly opposed to any semblance of interference from the outsider and to co-operation even with his fellows. It would seem that the small area devoted to tobacco, the importance of tobacco within that area, and the leadership of large farmers and of warehousemen and merchants in the tobacco towns would have made the bright tobacco section an ideal place for the development of some type of voluntary control of tobacco production and of co-operation in marketing the crop. It was in other tobacco sections, however, that restriction of acreage and co-operation in marketing arose. The bright tobacco belts were little affected by efforts of the Grange to organize co-operative marketing in Kentucky and in western Massachusetts prior to 1900. Kentucky and Tennessee burley and dark tobacco growers attempted to organize in the years subsequent to 1904 in an effort to meet the monopoly buying of the American Tobacco Company by monopoly growing and selling. The years 1905, 1906, 1907, and 1908 were marked by violence in these states. The co-operating tobacco growers attempted to withhold tobacco from the tobacco "trust" and burned the barns and warehouses of tobacco farmers and dealers who refused to join them. The "Night Riders" succeeded in raising prices--or, at any rate, prices went up--and the tobacco co-operatives dissolved in success.¹ Throughout these years of strife, the bright tobacco farmers were quiet.

The bright tobacco farmer received a shock, however, in 1920. The World War had increased the demand for bright tobacco rapidly enough to offset even the rapid increase in acreage about the end of the decade 1909-1919 (Table 19). After the war, European dealers re-stocked in bright tobacco and the returning soldiers popularized cigarette smoking in America as never before. The bright tobacco crop of 1919-1920 brought an average of 44.58 cents per pound, farmer's weight. The following year, European dealers having re-stocked, foreign demand slackened, and the price of bright tobacco dropped to an average of 21.14 cents per pound.² The bright tobacco farmer's cash return was cut in half in one

¹John Hanna, "Agricultural Cooperation in Tobacco," Law and Contemporary Problems, Vol. I (Durham: Duke University Press, 1934), pp. 292-324. This article gives a full account of the co-operative movement in North Carolina.

²Chas. D. Barney Company, The Tobacco Industry (New York: The Chas. D. Barney Company, 1924).

year. He was taken completely by surprise. Many a formerly prosperous farmer, many a wealthy time merchant, and many a fertilizer dealer found himself unable to meet his obligations. Credit was badly impaired. Misery swept the bright belts in the "Tobacco Depression" of 1920.

The "Co-operative."--Action followed at once. The distress of the bright tobacco farmer was real, and it was particularly galling after the prosperity of war times. Discontent simmered and came quickly to the boiling point. The farmer faced 1921 with a heavy deficit from the preceding crop. All the farmer's credit agencies felt the strain. Banks were full of farm paper. The farmer was ready for action, and he did not lack leaders from the ranks of his creditors. A fiery young lawyer, fresh from organizing a co-operative association among the California raisin growers, was crusading about the country advocating co-operative associations after the California pattern. He was called to the bright tobacco country. The legislatures of Virginia, North Carolina, and South Carolina passed enabling acts, and on February 19, 1922, the Tobacco Growers Co-operative Association of Virginia, North Carolina, and South Carolina, more familiarly known as the "Co-op," was incorporated in Raleigh. It proposed to attain to control of all the tobacco production of the three states named. Already, half of the growers of 1920 had signed contracts, and by the first of July, 1922, some 80,000 growers had contracted to deliver their crop to the association. Half of these signers were in North Carolina, three-eighths of them in Virginia, and comparatively few in South Carolina and Georgia.¹

The "Co-operative" failed, and failed promptly. One reason for its failure was its disregard for geographic variations within the southeastern tobacco-growing area, and consequent variations in the tobacco produced. The association pooled all types of tobacco and attempted to produce parity in price per pound. Dark tobacco and bright, and even the sub-types in bright tobacco, behave to a degree as separate commodities. There was no reason to think that all types of tobacco were in the same market position or that any one producing area would be willing to sacrifice for the benefit of other areas. There is a deep-seated antagonism

¹Hanna, op. cit.

between the several states concerned, between the Piedmont and the Coastal Plain, and even between counties of any one belt. It would require a deep-reaching stirring of spirit to induce, say, a North Carolina bright tobacco grower to sacrifice a part of his cash income for the benefit of a Virginia fire-cured grower. He would probably react more favorably to an appeal for help from Romanians or Greeks. Particularly would the Old Belt farmer resent a sacrifice in favor of the Georgia grower, for he very sincerely considers bright tobacco his personal crop and he looks with little favor on the new growers who have entered the field. Another reason for failure was the tremendous potential bright tobacco acreage in the Southeast. There was nothing to prevent the non-tobacco farmer from growing tobacco, and he began promptly to prepare tobacco lands when assured that the "Co-operative" would raise the price. The threat of new acreage in the hands of new producers in turn increased the temptation of the established grower to swell his contracted acreage by various subterfuges and thus enlarge his profit from the presumptive higher prices. Further, some of the signers were under real obligations by contract with creditors to produce tobacco in quantity more or less set. Creditors in some cases brought suit, claiming a contract prior to the co-operative contract. Another factor in the failure of the co-operative movement seems to have been the opposition of tobacco buyers and warehousemen, many of whom had been antagonized by talk of eliminating the warehousemen and by actual steps in that direction and by proposed price dictation on the part of the "Co-operative." High salaries paid to officials, alleged unethical practices on the part of some directors, and the general distrust of the tobacco farmer for the "city man" played their part. The final outcome was that many farmers failed to execute their contracts and were sued by the "Co-operative," thus increasing the unrest occasioned by failure of the association to bring a millenium and, particularly, by its failure to pay growers promptly for tobacco delivered. The "Co-operative" declined and was finally thrown into the hands of receivers in June, 1926.¹

For all its weakness, the co-operative movement is credited with raising prices temporarily. At all events, tobacco averaged a third higher in 1922 than in 1921. Prices declined rapidly

¹Ibid.

after it became apparent in 1922 that the co-operative movement would not succeed.¹

Laissez faire.--Total production of bright tobacco increased with the decline of the co-operative movement, particularly after the association went into receivership in 1926. Production increase was met partially by increase of consumption and partially by heavy buying for storage on the part of domestic and foreign manufacturers. Average prices declined as acreage increased (Table 20).

TABLE 20
PRODUCTION, FARM PRICE, FARM VALUE, AND EXPORT OF
BRIGHT TOBACCO FOR STATED YEARS^a
(000,000 Omitted)

Year	Production (Lbs.)	Average ^b Price (Cents)	Farm Value (Dollars)	Export (Lbs.)	Export (Per Cent)
1923	581	22.3	121	266	45.8
1924	437	22.5	94	207	47.4
1925	575	20.0	115	324	56.4
1926	560	25.6	139	289	57.5
1927	719	21.3	147	329	45.8
1928	739	17.7	131	414	56.0
1929	750	17.9	135	430	57.3
1930	864	12.1	104	433	50.1

^aFrom Joseph G. Knapp and L. R. Paramore, "Flue-cured Tobacco Developments Under the A.A.A.," Duke University Studies in Law and Contemporary Problems, Vol. II (Durham: Duke University Press, 1935).

^bPrice from Yearbook of Agriculture, 1931.

The large crop of 1929 brought an average of 17.9 cents per pound. The tremendous crop of 1930 brought only 12 cents per pound. Shocked by a drop of almost 50 per cent in one year, the farmers reduced their acreage for 1931 by some 22 per cent and their poundage from 864,000,000 to 669,000,000. The price in 1931 was, none the less, only approximately eight and a half cents per pound, average; and the farm value dropped from \$104,000,000 in 1930 to \$57,000,000 in 1931. Angry farmers cut their acreage for the following year by approximately a third--and the price average rose slightly to 11.6 cents per pound. Exports of tobacco

¹Chas. D. Barney Company, op. cit.

in 1932 rose to 71.8 per cent of the production for that year, as foreign buyers took advantage of the low prices.¹

Government control.--The plight of the farmers throughout the nation engaged the attention of the Federal Government in the depression years, and on May 12, 1933 the Agricultural Adjustment Act was passed by the Congress. The administration deemed the need of tobacco farmers less urgent than that of certain other farm groups and proposed that the attempt to procure "parity"² prices for tobacco be postponed until the crop year 1934, particularly since the 1933 crop was well under way. It was proposed tentatively that marketing agreements might be consummated for the 1933 crop, but that plans for acreage control and for general agreements with buyers be deferred for a year. However, when Georgia markets opened on August 1, 1933, with prices but little higher than for 1932, a wave of protest swept the bright tobacco belts. Tobacco farmers demanded that they receive the immediate aid promised cotton and wheat farmers. Mass meetings were held. The governors of North and South Carolina closed the markets of their respective states by executive order on September 1, and the markets of Virginia were not allowed to open. A torrent of protest flowed to Washington. Washington was able to act, for an Executive Order from the President had placed tobacco under the jurisdiction of the Agricultural Administration, conferring on it all the powers conferred by the National Recovery Act except the determination of labor questions.³ It was decided that a voluntary agreement of growers to restrict the tobacco acreage of 1934, if made before tobacco markets re-opened, would give the Agricultural Administration a weapon for attaining better prices for the 1933 crop. Within a week, 95 per cent of the bright tobacco growers signed an agreement to make such reduction in their tobacco acreage for 1934, not to exceed a 30 per cent reduction of their average acreage for 1931-1933, as the Secretary of Agriculture might deem necessary to bring bright tobacco prices to

¹Yearbook of Agriculture, 1931, 1932, 1933.

²"Parity" price for tobacco was set as the average price for the period August, 1909 to July, 1929. Yearbook of Agriculture, 1934, p. 8.

³Statement of the Secretary of Agriculture, Yearbook of Agriculture, 1934, p. 15.

"parity." Armed with this agreement, the Secretary of Agriculture was able eventually to make agreements with buyers¹ which raised the average price of the 1933 bright tobacco crop to 17 cents per pound and its total farm value to nearly 50 per cent more than that of the crop of 1932. The devaluation of the dollar was a factor in raising prices, since it allowed foreign buyers to pay the higher price in American money at approximately the 1932 cost in their own currencies.

The voluntary "sign-up" of bright tobacco farmers was implemented by the passage, in June, 1934, of the Kerr Tobacco Act. The Act levied a tax of from a fourth to a third of the sale value of bright tobacco harvested in the crop year 1934-1935, the Secretary of Agriculture to determine the exact tax rate.² Growers operating under contract with the Department of Agriculture were to be given warrants with which to pay the tax. Thus a handicap of between a fourth and a third of the value of the leaf was to be established in favor of the contract grower.³ Growers were allowed to sign contracts after the passage of the Act. This Act was not to go into effect for any type of tobacco until three-fourths of the growers of that type had approved it by referendum, and the referendum was to be repeated annually. The referendum carried for the crop of 1935, and, with numerous changes designed in general to improve the lot of the small grower and to obviate inequities in allotments of acreage, it carried for the crops of 1936, 1937, and 1938. It failed to carry for the crop of 1939, in the referendum held December 10, 1938. Surprisingly enough, only 57.4 per cent of the growers who voted in North Carolina favored control.⁴ It would appear that the older tobacco states would have favored a curb on new growers, for the menace of over-production is particularly apparent in such new tobacco states as

¹Yearbook of Agriculture, 1934, pp. 47-48.

²This Act was applied to several types of tobacco.

³Warrants were to be issued to non-contracting growers in poundage not to exceed 6 per cent of the total poundage of contracting growers. The purpose of this provision was to allow adjustment of special cases among non-contracting farmers. The act was not to be put into effect for any type of tobacco until three-fourths of the growers of that type had approved it. See Yearbook of Agriculture, 1935, p. 58.

⁴News and Observer, December 12 and 13, 1938.

Georgia, with enormous potential acreages and a disposition already more than once evidenced to increase tobacco plantings. A summary of developments in bright tobacco under the Kerr Act makes this vote of the North Carolina tobacco farmer appear all the more amazing.¹ It seems obvious (Table 21) that the control program had greatly benefitted growers.

TABLE 21
NORTH CAROLINA TOBACCO UNDER THE A.A.A.^a

Year	Acreage Harvested	Yield Per Acre (Pounds)	Production (000 Omitted) (Pounds)	Weighted Average Price Per Pound (Cents)
1931	698,000	687	479,526	8.8
1932	470,000	625	293,694	12.0
1933	687,000	784	538,839	16.0
1934	492,000	847	416,840	28.5
1935	617,700	935	577,435	20.3
1936	597,000	766	457,375	23.0
1937 ^b	674,000	884	595,530	24.0

^aData from Yearbook of Agriculture, 1931-1938 (Agricultural Statistics, 1936-37-38).

^bPreliminary.

It appears that farmers wish to return once more to laissez faire. The result, presumably, will be a far greater production of tobacco, particularly in the more southern states.² Blue mold has effectively reduced plantings in the past and may, despite recently developed remedies, do so again. The result of the defeat of control must be awaited with at least a measure of trepidation.

¹It is impossible to assign the reasons for this defeat. It is said in tobacco counties that the measure was defeated by small tenants who, though tobacco prices were higher, were unable to make a living on the small acreages allotted to them.

²Newspaper statements in the spring of 1939 are to the effect that tobacco production will be increased about 15 per cent.

Tobacco, the "First Crop"

Tobacco is the first crop in North Carolina in value. In 1936, the value of tobacco was more than the combined value of cotton, corn, and commercial truck--the next three crops in order of value. It was worth more than all the State's livestock combined. It accounted for nearly \$107,000,000 of a total crop valuation of \$235,000,000--and North Carolina ranked fifth in the nation in total value of crops.¹ It brought more than half of the total State farm income of 1937--nearly \$150,000,000 of a total of approximately \$271,000,000. Of field crops, tobacco accounted for \$155,000,000 of a total of nearly \$233,000,000.²

The importance of tobacco in North Carolina life can hardly be exaggerated. The heavy un-balance of farm economy, with over half of its money return in tobacco, is accentuated by the short selling period and long producing period of the crop. There is a long season of dearth and a short season of apparent prosperity. The industrial economy of the State is heavily affected by tobacco; directly, in that great tobacco factories and smaller re-drying plants, stemmeries, and so forth, employ labor, use transportation, pay dividends; indirectly, in that the prosperity of the State depends heavily on the fortunes of the tobacco crop and the tobacco factories. Credit agencies are affected. Educational institutions, hospitals, and religious activities have felt the touch of tobacco. Bright tobacco is the heart of North Carolina, and to a striking degree the whole State vibrates in tune with its fortunes.

Landscape Changes

Bright tobacco has contributed a new building to the countryside--or a modification and multiplication of an old one. The "tobacco barn," the curing house, is a striking feature of the tobacco landscape (Fig. 9). These barns, on many farms, are grouped near the dwelling in the semblance of a small village. On other farms they extend in long rows, placed perhaps 50 yards apart to allow some fire protection and at the same time allow the farmer to tend the fires of two barns at once. In some cases

¹Farm Forecaster, November, 1937.

²News and Observer, December 23, 1937.

they edge the fields usually devoted to tobacco. Typically, they are to the leeward of a windbreak--on the south or east side of a grove or hedgerow. With the pack-house and the large piles of wood hauled to the barn during the winter and allowed to cure through the summer, these barns on a large tobacco farm make a very imposing sight.

The landscape has changed lamentably in another way in the steeper country of the Old and Middle Belts. Three generations of tobacco have devastated the countryside. Bright tobacco is kept scrupulously clean of weeds and grass during the growing period. It is cultivated weekly for the first six weeks or so of its growth. The field in which tobacco is to grow is denied legumes by most farmers, and until very recently, was given no winter cover crop. The rotation, if any, is corn-wheat-tobacco-corn; or corn-tobacco-corn. In a region of open winters and torrential summer rains, such farm practice spells ruinous erosion of steeply sloping fields. The Old and Middle Belt farms are gashed and scarred by gullies, stripped by sheet erosion. Fields once farmed are growing briars and broom sedge, small pines, or in later stages thriving forests of pine. Almost every pine woods in the Piedmont is a ruined field, still showing the marks of cultivation.¹

Not all the ruin can be attributed to tobacco. Cotton and corn are soil destroyers as well. But tobacco seems to sear the land so distinctively that an experienced observer passing along North Carolina's Piedmont roads can almost locate tobacco-growing areas from merely viewing the soil destruction about him.

In the towns, great wooden or brick sheds have been built for the tobacco sales. One story, crouching over half a city block, their roofs gleaming with close-set windows, the warehouses are distinctive (Fig. 18). So, to a degree, are the re-drying plants and the tobacco factories, though these plants are much like other light manufacturing buildings. Perhaps the towns are most distinctive in their smell, the sweetish smell of all tobacco towns. In the manufacturing towns, a third building type is added --the storage house. These storage sheds are roofed and sided

¹There has been no official statement of the extent of soil erosion by counties, but two soils experts working in the Old Belt estimated unofficially for the author that 90 per cent of the topsoil of Durham and Caswell Counties (both Old Belt counties) has been removed.

with galvanized iron in such fashion that they can be thrown open to the air. They are dotted about the towns in the neighborhood of the factories or concentrated in enormous storage fields outside the corporate limits, resembling oil "tank farms" except in the rectangular pattern of the buildings (Fig. 20).

It is a common observation in eastern North Carolina that the tobacco areas show more paint on farm houses, better farm houses, more flowers in the yards, than do the non-tobacco areas in general. Such observations are difficult to substantiate or to attribute to any one factor. Such observations do not, moreover, apply in the Piedmont. Here, an astonishing number of farm dwellings are of log construction and without any semblance of so-called modern conveniences. The farms have a pioneer flavor, after 200 years of settlement. Tobacco has not made rich men of tobacco farmers. On steeper lands, they have merely contrived to sell a thin birthright, in three generations of tobacco tillage, for an annual minimum of pottage.

Bright tobacco is omnipresent over more than half of North Carolina. It is omnipresent in the landscape of town and countryside. It is omnipresent, though invisible, in the economic and social structure of the State. North Carolina, today, some three generations after the Slade experiment, is primarily a bright tobacco state.

CHAPTER III

PRODUCING BRIGHT TOBACCO

The process of producing bright tobacco is divided into three parts, namely growing the leaf, curing the leaf, and marketing the crop. Each is an essential part of the farmer's job, and together they keep him busy through most of the year. To carry on successfully, he needs special knowledge and skill, a considerable quantity of commercial fertilizer, special tools and buildings, extra labor at times, and contact with a tobacco market. The tobacco farmer has the advantage of being always sure of a market for his crop, but the price fluctuates and the return from the crop comes at the end of the production process. As a result he has the problem of financing his work and his family, on a fluctuating income, through the long growing and curing season. As only a small part of the typical farm is in tobacco in any year, the farmer has land on which to raise his own food and feed for his stock. He is limited in his choice of feed crops, however, by the fact that such legumes as peas and clover leave nitrogen compounds in the soil and render it useless for bright tobacco for a year or more. Further, the heavy labor requirement of bright tobacco leaves the farmer little time for other crops. Some tobacco farmers buy a part of their feed and food, but most of them, particularly in recent years, grow most of their own subsistence crops. Still, the bright tobacco farmer depends very heavily on his tobacco, particularly in the Old Belt, where there is no other money crop. This high degree of dependence upon a single crop increases the difficulty of the farmer's job. He has to contend with complex physical, biological, and economic forces. Here we are concerned primarily with the interplay of these forces and thus the problems of producing bright tobacco will be considered first in terms of the whole producing area in North Carolina, and secondly in terms of three farms representative of the three bright tobacco belts in the State.

Growing and Curing the Leaf

Growing the plants.--About the second week in January, the Piedmont counties of the Virginia-North Carolina border burst into flames. Columns of black wood smoke rise over the countryside day after day, and the glow of many fires rings the horizon at night. The Old Belt tobacco farmer is once more taking up his battle for a livelihood--a battle which will progress through the stages of preparing the plant bed, sowing the seed, caring for the tiny plants, transplanting the young plants to the fields, cultivating the crop, and curing the leaf.

The farmer's first thought is of a plant bed, for the tobacco seed are so small and the young plants so feeble as to require special care for several weeks and danger of frost in early spring makes it necessary to grow them under partial cover.¹ In the plant bed, when the seedlings are tender and crowded closely together, tobacco is vulnerable to the attack of insects and of fungus growths. The Old Belt farmer, schooled by misfortune, selects for his plant bed a spot in the woods, for there the pupae and spores of these enemies are least likely to be numerous. Further, weed and grass seeds are rare in the woods. The careful farmer selects a southerly slope, for he will need to utilize fully the weak sunlight of late winter and early spring. If possible, he will select a spot near a stream, for he may need to water the bed if there is a prolonged drouth in early spring. He clears the chosen area, allowing perhaps 200 square yards of bed for three acres of tobacco.² In clearing, the brush is piled, and possibly brush is brought from the surrounding woods, to make a heap over the entire bed. On the first still day when the land is dry enough the brush heap is burned.³ The burning destroys many lurking pests in the top inch or so of the soil, and adds

¹Farmers grow their plants early and transplant them to the field as early as possible because, they say, the cool nights of late summer and fall cause the tobacco leaves to become unduly thick.

²This allowance is about double that of ten years ago. Blue mold has devastated plant beds in recent years, and the farmer sows a larger plant bed, or two or three plant beds widely scattered over the farm.

³The farmer's rule is: "When it is too wet to plow, it is too wet to burn."

something to the security of the plants to be grown. The careful farmer leaves a windbreak to the north and west of his clearing (Fig. 5). His purpose is to protect the bed from cold winds, but there is probably some protection from wind-borne spores and insects, as well.

Some Old Belt farmers do not burn their plant beds, and the practice is by no means uniform in the newer belts. It is a traditional part of plant bed preparation,¹ however, and sterilization of beds is strongly recommended by tobacco experts.² Farmers have been discouraged by the fact that even burned beds become infected. Both insects and spores may reach the bed from outside, and downy mildew will survive severe burning.³ Old Belt farmers are dubious as to the efficacy of burning, but the tradition is strong enough to cause most of them to burn the beds. In the newer belts the tobacco tradition is neither so old nor so strong as in the Old Belt, and wood is much scarcer, due to the higher percentage of cleared land. It seems unfortunate that burning should be practiced least in the areas which need it most --for the milder winters of the Coastal Plain indicate greater survival of pests between seasons. It is probably significant that blue mold (downy mildew), the most recent and injurious of the fungus diseases of tobacco, developed first in the newest growing area and reached the Old Belt last. The farmers of the newer belts are not so careful to locate their plant beds in the woods as are Old Belt farmers, nor do they always select a virgin spot for the bed or locate it on a south slope. Some very large plant beds of the Coastal Plain lie in open fields, with no windbreak, and are used for two or more years in succession. For one thing, woods and slopes are scarcer than in the Piedmont, and, for another, the New Belt and Border Belt farmers have other money crops which demand attention, and they are rather scornful of the Old Belt farmer's solicitude for his tobacco.

After the bed is cleared and sterilized, if sterilization

¹Robert, op. cit., p. 33.

²U. S. Department of Agriculture, Steam Sterilization of Soils for Tobacco and Other Crops, Farmer's Bulletin No. 1629 (Washington: U. S. Department of Agriculture, 1930).

³The Bulletin, North Carolina Department of Agriculture, December, 1934, p. 12.

is practiced, it is plowed or disked, and dragged until it is pulverized to a depth of perhaps three inches. All stones, roots, branches, and other debris are carefully removed and about two pounds of a prepared commercial fertilizer are applied to each square yard of surface.¹ A tablespoonful (about 60,000 seed) of the almost microscopic tobacco seed is then taken for each 100 square yards of surface to be sown, mixed with ashes, dust, or fertilizer to make it easier to handle, and broadcast on a still day, once lengthwise and once crosswise the bed.² The surface is then tramped, rolled, or packed with a board and a light cheesecloth³ is stretched across the bed (Fig. 5), fastened to boards set edgewise or to logs laid around the margin of the bed.⁴ The seed are in the ground, as a rule, some time in January, though some planters seed as early as late December and some as late as the middle of February, apparently according to individual preference and convenience, without regard to location. Farmers say there is no difference in the time when plants are ready for the fields, since the early-sown bed grows slowly and the late-sown bed grows fast. The advocate of early sowing thinks his plants are tougher and have a better root system.

The farmer works at a variety of tasks while waiting some three weeks for the seed to germinate. He checks over his tobacco sticks and, if he needs them, splits out more from a straight grained pine. He patches the roofs and repairs the flues of his tobacco barns. He cuts and hauls to each barn some five cords of "flue-wood"--pine and hardwood--to season for the curing.⁵ The

¹E. Y. Floyd recommends a 4-8-3 mixture--4% nitrogen, 8% phosphorous, 3% potash (Factors Affecting the Quality of Flue-Cured Tobacco, N.C. Agricultural Service Extension Circular No. 212, November, 1936).

²Lionel Weil, a tobacco planter of Wayne County, recommends sowing the seed in rows. He states (News and Observer, August 1, 1938) that row cultivation allows better plant development, reduces damage from blue mold, allows additional fertilization if needed, and permits cultivating the plants.

³This cheesecloth is locally termed "canvas."

⁴Some farmers set the frame of logs or boards a couple of feet inside the bed, leaving a rim of uncovered plants about the bed proper. This rim is heavily poisoned, and many insects are doubtless killed here and do not enter the covered bed.

⁵A heavy drain on the forest. R. W. Graber of the State

"flue-wood" may be a by-product of clearing a "new ground." North Carolina farmers, particularly Negroes, it seems, are stirred into an orgy of clearing about this season of the year. They are not, in many cases, clearing virgin soils. Rather, they are re-clearing soils once farmed, and abandoned for perhaps a generation. The restoration of the soil is slight in so short a period, and the clearings so enthusiastically made during late winter are often allowed merely to grow up once more in broom sedge and small pines. Some new grounds, of course, are put into cultivation in a business-like manner.

Once the plants appear, the farmer is forever "pottering" about the plant bed. Toward the middle of sunny days he will roll back the canvas and allow the sunlight to strike directly into the bed, carefully replacing the cover when the sun drops low. On each visit he will pore over all accessible portions of the bed on the lookout for fungus infection or early insect enemies and for the appearance of weeds. No matter how carefully the bed has been located and prepared, some attack on the small plants is almost inevitable. Some stray sporangium is likely to fall into the bed and, particularly in cool, damp weather, to strike its roots into nearby plants.¹ Diseases can be spread with appalling rapidity if a long period of cool, damp weather prevails. Farmers tell of beds devastated within three days after blue mold² was first noted. Recurrence of sunny weather will check fungus diseases, and the farmer is careful to roll back his canvas and admit all possible sunlight to an infected bed. Weather in spring in this area is quite variable: there are years in which two weeks or so of rainy weather may lead to great damage to beds, and there are years in

College Extension Service states that many farmers are hauling flue wood as far as 25 to 40 miles. Oil-burning furnaces for curing are being introduced into the State and are said to be quite satisfactory.

¹Farmers persist in using canvas year after year as long as it will hold together. They thus, in many cases, infect their own plant beds.

²"Downy Mildew" is the botanical name for this scourge. It has been prevalent in southeastern Australia since 1850, appeared in the United States in 1921, disappeared, to re-appear in 1931. It is now firmly established in all the bright tobacco areas. (The Bulletin, N. C. Department of Agriculture, December, 1934.) The United States Department of Agriculture issues bulletins on the various diseases of tobacco.

which only short damp spells are interspersed with sunny weather, and fungus damage, while present, is not excessive.¹ Eradication of fungus diseases after they have gained a foothold in the plant bed is very difficult, for any treatment which will destroy the fungus growths is likely to injure the tobacco plants. Some farmers dust nitrate of soda over an infected bed, hoping thus to increase the power of the plants to resist infection. Most farmers are careful to sun an infected bed. Some of them hold, however, that either of these treatments will merely increase the damage. Agricultural experts urge the farmer to destroy infected plants, but many of the farmers hesitate to destroy their plants, and some of them hold that an infected plant will recover if it can be brought to transplanting size and set in the field. Oil of copper and benzol have been used with considerable success recently, particularly in fighting blue mold.² Many tobacco farmers, however, appear to consider the fungus attack a natural calamity and take no action to combat it.

With insect attacks, the farmer reacts differently. Here is something alive and visible. There is nothing mysterious about the "flea-bug," a small beetle which can jump with all the élan of a flea and which supports itself by sucking the sap from the underside of the tobacco leaves. The cut-worm is an old enemy, and the farmer understands when these worms cuts off the young plants at the ground. He has learned that tobacco flies lay eggs in the bed and that the larvae which hatch will burrow into the ground with such vigor as to dig up small plants. All the insects can be controlled by use of proper poisons, and there are farm bulletins which specify the poisons and proper methods of applying

¹The spring of 1937 was cool and damp in Georgia. Georgia planters drove as far north as Virginia in search of plants, for their beds were ruined by blue mold. They are reported to have paid as much as thirty dollars for plant beds from which the owners had drawn all the plants they needed, though several farmers told the writer that it was indecent to sell plants. The News and Observer, May 8, 1937, carried this headline: "ARMED FARMERS WATCH TOBACCO" and continued with a story of farmers with shotguns guarding East Carolina plant beds. Farmers told the writer of cases in which plants had actually been stolen from the fields after being set.

²News and Observer, October 22, 1938, quoting J. E. Stone, demonstration agent for Pittsylvania County, Virginia, on the research of Dr. J. E. Pinkard, of the Chatham, Virginia, experimental station.

them. Probably most farmers have learned to follow directions, but some of them become veritable insect Borgias and are forever experimenting with "Hell-brews" of their own.

If cool, damp weather does not bring fungus attacks, there may well be a prolonged drouth. Both types of weather are to be expected. "Blackberry Winter" and the "Long Season in May" are current local terms for protracted coolness and dampness at this season, and the spring drouth, while it has no name, is quite common. Drouth prolonged for several weeks means watering the bed, carefully and laboriously, by hand. The water may have to be hauled long distances or it may be dipped up from a nearby stream.

During the plant bed period of production, the farmer is likely to have to weed some three to four times--a laborious process of the back-breaking sort usually assigned to the women and children. It seems to be accepted as a man's work, however, and there is usually a man in the weeding gang, though he may be assisted by larger children.

Fungus attacks, insect attacks, growth of weeds, need for watering--all depend largely on the weather. In each item the farmer has learned to adjust himself well to his local situation except in the case of blue mold. New land for beds, burned; a windbreak, a southern slope, a stream-side location; fertilization; the canvas cover and its handling--all these are the result of centuries of local tobacco production. The farmer may ignore these adjustments to the forces of nature, but he knows them. They are a part of the local farm heritage.

Preparing the fields for the plants.--The tobacco lands have lain idle throughout the winter and early spring. Until recently, they commonly were unprotected by winter cover crops. Now the Federal Government makes a small per acre payment for cover crops, and much of the tobacco land is sown in rye in the fall. Legumes are seldom found on tobacco lands because farmers are afraid of the unknown and uncontrolled nitrogen supply put into the soil by these crops. Some farmers confident of their skill sow legumes and reduce their bill for commercial fertilizers by making a reduction in purchased nitrogen. Some farmers rotate tobacco with such crops as corn and wheat. Others, particularly in the newer tobacco regions, use the same field for tobacco year after year, thus adding to the danger of fungus infection, insect damage, and soil impairment.

The first sunny days of true spring, about April first in the New and Border Belts, and perhaps two weeks later in the Old Belt and Middle Belt, find the farmer and his single mule breaking the light, sandy soil of the selected fields. The countryside teems with activity. On larger eastern farms there may be half a dozen one-mule plows turning parallel furrows across the level fields. On the isolated farms of the steeper Piedmont there will be a single worker in each cleared spot in the prevailing woodland. Cover crop, if any, is turned under, the fields are disked, perhaps, then dragged until the top four to six inches are thoroughly pulverized. The soil is next thrown into low ridges known locally as beds, spaced four feet apart, except that each group of eight beds is separated from the next eight by a four and a half foot interval to allow passage of a tobacco sled at harvest time. The bed is split by a furrow and some 600-1,200 pounds of commercial fertilizer drilled into the row.¹ The row is covered once more, and the field is ready for the tobacco plants (Fig. 6).

¹The question of what fertilizer ingredients to apply, in what proportion, and in what amount, is an extremely difficult one and requires a very local answer. Enough nitrogen must be applied to promote a healthy growth of the plant, but too much will give a too-heavy leaf and one hard to cure. Phosphorous is expensive, but enough must be applied to produce a quick-growing and disease resistant plant. Potassium is needed to increase the sugar content of the leaf and to increase its resistance to disease, but too much potassium will "burn" the plants, particularly in dry weather. There should be a little chlorine, but too much will cause the leaf to cure and burn badly. Some lands need magnesium and boron in small amounts. The soil varies considerably from field to field, even, in its content of these minerals, and only elaborate soil analysis can afford a sound basis for estimating the exact mixture needed. Moreover, the weather will affect the efficacy of fertilizers. To complicate the matter still further, the farmer does not know what sort of tobacco he should produce for the current year. He cannot predict whether it will be better to fertilize heavily and produce a large poundage of low-priced tobacco or to fertilize lightly in an effort to produce a small poundage of high-priced tobacco. He cannot forecast the market or the weather, nor can he easily secure the elaborate soil analyses he needs, particularly if he is a tenant and likely to move frequently. Most farmers buy the fertilizer offered by their favorite dealer and follow some rule-of-thumb as to the amount to be applied. The State College Unit of the University of North Carolina offers free soil analyses, and a committee of tobacco experts has recently made a study of tobacco fertilizers. The report of this committee is printed in the News and Observer (Raleigh) for November 5, 1938. Extended discussions of tobacco fertilizers are contained in the Yearbook of Agriculture, 1927, 1932, 1936, and 1938.

Both shallow plowing and fertilization are rough adaptations to the soil types used, and the bedding is an adaptation to the growth preference of the tobacco plant. The bright tobacco farmer is essentially a sponge farmer, using practically sterile, light soil as a medium through which to supply severely limited quantities of chosen mineral foods to the greedy tobacco plant. The subsoil is, as a rule, very porous. The farmer, consequently, does not wish to break it very deeply, since to do so would facilitate loss of applied fertilizers by leaching. The fertilization is, of course, to supply the needed plant foods. The bedding, taking the place of the old hand-made hill, is to facilitate drainage, for the tobacco plant is readily injured by too much ground moisture.

Transplanting.--Tobacco will not tolerate frost. Thus transplanting time comes when danger of frost is considered past, varying in the several belts from about the first week of April to the first week of May (Tables 8 and 9). The plants should by this time be strong, sturdy, eight inches or so high, with well-developed root systems. The farmer waits for the first "good season" when a well-developed cyclonic storm passes over, or takes advantage of a "little season of rain" from a shower if he can do no better, moistens his plant bed, and draws by hand the plants needed for setting some 5,000-6,000 to the acre.¹ The plants are set on the fertilized beds at intervals of some 22-28 inches. Some farmers use a horse-drawn transplanting machine which will set some five or six acres per day. Some old-fashioned farmers rely on the planting peg. Most farmers today use a small hand machine, requiring two people to operate it and setting the plants no faster than the old hand-peg method. It obviates stooping, however (Fig. 6), is cheap, and appears to be quite satisfactory. A prolonged drouth at transplanting time requires that each plant be watered as set. The enormous labor involved in hauling water to the field and applying a cupful to each plant set makes "water-an'-plantin'" an almost intolerable task for the small farmer. The larger horse-drawn machine is equipped for watering without undue hardship.

¹Spacing depends on the "strength" of the soil, the amount of fertilizer applied, the grade of tobacco desired, and the local custom.

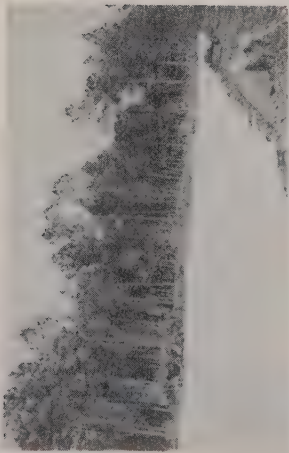


Fig. 5.--An Old Belt plant bed, looking west.



Fig. 6.--Transplanting tobacco with a hand machine



Fig. 7.--The first priming



Fig. 8.--The last priming

The field must be inspected after some four or five days and any dead or unpromising plants replaced. It is very important that all plants in a field progress to maturity at about the same rate, since cultivation, harvesting, and curing must be timed for the majority of the plants. More than one replanting adds considerably to the labor of producing a crop. Cut-worms destroy plants at this stage and "flea bugs" may attack at once. Each is offered its particular poison, and the poison is renewed after each heavy rain. Early-set plants are less likely to suffer, since they attain some toughness and resistance before the insect veterans of the past winter have time to produce many litters of offspring.

Cultivating the crop¹.--The plants are established in a week or ten days, if all goes well, and the first cultivation is given. The light, sandy, soil, particularly in the sandy loams and sands of the New and Border Belts, makes it possible to cultivate close to the plants without damaging them, and to cultivate very soon after a rain. The soil is thrown away from the row of plants by a light cultivator,² and hoe hands usually follow to "chop out the middles"³ between plants and draw up a small mound of earth about each plant. This labor is performed, as a rule, by women and children of the family. One chopping is sufficient unless prolonged rains allow grass to develop near the plants. Subsequent cultivation is usually by plow. Four to six cultivations are given in all, at intervals of about ten days and after each heavy rain. The final working which "lays by" the crop is given with a sweep, since by that time roots will have advanced into rows far enough to make deeper plowing dangerous. All cultivations throw soil toward the plants, and the final working leaves tobacco growing on a bed some six to eight inches high,

¹The account of tobacco cultivation which follows is based on observation and on interviews with farmers. An excellent source is E. H. Mathewson and E. G. Moss, Tobacco Culture in North Carolina, North Carolina Agricultural Experiment Station, Bulletin No. 237 (Raleigh: N.C. Department of Agriculture, 1917).

²This process leaves only a narrow strip of land to be chopped. Some farmers "bust out the middles" of the rows with a cultivator and leave a broader space to be chopped.

³The "middles" here are the spaces between plants in the plant row.

thus allowing better drainage for the root system and protecting the lower leaves from mud spattered by the beating rains of summer. Cultivation ceases after perhaps eight weeks because by that time the plants have grown enough to shade out grass, in ordinary weather, and to meet across the rows. Further cultivation would be injurious. Grass in wetter years develops dangerously and can hardly be combatted. At laying-by time, mid-June to mid-July, the plants are two feet high, perhaps, and are beginning to "button out"--send up the blossom stalk.

This "buttoning out" means the beginning of one of the most laborious and unpleasant tasks of the entire producing process. The farmer must break out the blossom stalk, thus forcing the plant to devote its sap to leaf-production rather than seed-production. Topping requires judgment. The quality of leaf desired, the natural and artificial fertility of the soil, the spacing of the plants, and the probable weather for the ensuing weeks of the growing season must all be considered. Many leaves will mean light-bodied leaves; few leaves will predispose the plant to injury from wildfire and black fire; closer spacing and less fertile soil should mean fewer leaves; abundant potash will partly discount the danger from fungus disease, while abundant nitrogen will increase the danger; drouth or wet weather, if they could be forecast, could be partly offset by proper topping--and, once more, there is the question of the market, whether light-bodied tobacco or stronger tobacco will sell better in the fall.¹ The farmer is more or less aware of these factors in his topping problem, and he allows from 12 to 18 leaves to the plant, not counting the lowest two, the "plant bed leaves," which usually wither away before the end of summer. A number of Border Belt planters in the past two years have not topped at all, allowing their plants to send up tall, beautiful blossom stalks to a height of eight or ten feet and to produce a large number of very light, small leaves. Their leaf does not command high prices, but they consider that the saving in labor is enough to balance the loss in cash return. The topping is no sooner over than the plant, thwarted in its first effort to reproduce itself, sends up two stalks, "suckers," from the axils of the topmost leaves. These suckers are broken out at once, whereupon other pairs of suckers

¹E. Y. Floyd, op. cit.

shoot up and must be removed at least weekly until the plant is harvested. After the harvest the plant sends up suckers and blossoms profusely in a final attempt to reproduce itself.¹ Topping and suckering are unpleasant tasks. A sticky sap exudes upon the hands and clothing of the workers and quickly forms a heavy, black gum. Much stooping is involved. The plants are often drenched with dew or rain, and the task is a hot one after the plants are tall enough to shut off cooling breezes.

Another task of the cultivation period is to continue the battle against insects. The cut-worm and "flea bug" are less to be feared as the plants become larger, but the "flea bug" persists and necessitates an occasional dusting of poison. New insects appear as the summer advances. The bud worm must be killed by poison placed carefully in the bud tip. The horn worm begins to eat holes in the leaves and must have an appropriate poison, dusted on in late afternoon or early morning when the dew is on the fields. The farmer watches for the horn worm as he "suckers" the fields, removing him by hand and dashing him violently to the ground.² Insects do considerable damage and necessitate a considerable amount of labor, but they can, as a rule, be controlled.

Damage by fungus disease may occur in the fields, but little effort is made to combat these diseases. Except, possibly, for blue mold,³ fungi which began their growth in the plant bed continue to grow in the field, and make their presence more and more apparent as maturity approaches. Infection may occur in the field, particularly if it is used continuously for tobacco, for the winter in this area is not severe enough to kill all the spores lurking in old tobacco stalks and weeds and in the ground

¹The farmer who saves his own seed selects plants at topping time, allows the plants selected to blossom, then covers the seed stalk with a paper bag to protect it from insects and from loss of the seed when ripe. The careful farmer cuts down old plants at the first opportunity, as they harbor insects and fungus disease spores throughout the winter.

²The farmer considers this a part of suckering and refers to the task as "worm-an'-suckering."

³Dr. Luther Shaw, plant pathologist at State College, Raleigh, is quoted in the News and Observer, June 22, 1937, as reporting the first epidemic of blue mold in the fields of North Carolina. He reported it as serious in the Old Belt, particularly in the neighborhood of Winston-Salem and Greensboro, and attributed it to the damp, cool weather prevailing at the time.

itself. There is nothing to be done in an infected field but remove infected plants and burn them. Prevention of such infection is by burning tobacco stalks, rotating crops, sterilizing plant beds and seed, and setting only healthy plants in the fields. There is no cure.¹

There is no cure, either, for most of the effects of unfavorable weather which may occur during the period of cultivation. Broadly speaking, warm and dry weather tends toward short, thick leaves with a strong aroma and flavor, while cool and damp weather tends toward a large, watery leaf which cures to a thin leaf with mild flavor and aroma. The sensitive tobacco plant will respond to any variation in the weather régime. Too much rain may "drown" the plant on poorly drained land and "sand-drown" it on very well drained land.² "Sand-drowning" is the result of a too-great loss of fertilizer by leaching, and is shown by a sallow, yellowish-green color in the leaves. It can be remedied, at least partially, by a side-dressing of fertilizer, but this is, of course, an expensive process. Hail is a real menace, and hail insurance is widely carried by farmers. The broad, tender leaves of the tobacco plant render it peculiarly vulnerable to this damage. A heavy hail storm can leave a tobacco field stripped to the stems.³ If the plants are young, however, there is a degree of recovery.⁴

¹James Johnson, Tobacco Diseases and Their Control, U.S. Department of Agriculture Bulletin No. 1256 (Washington: U.S. Department of Agriculture, 1924).

²"Tobacco just can't stand wet feet for a long time," Dean I. O. Schaub, State College Extension Service, Raleigh. See E. G. Moss and Jas. F. Bullock, The Culture of Flue-Cured Tobacco in North Carolina (The Bulletin, North Carolina Department of Agriculture, January, 1933), p. 12. for a discussion of "sand drown." It is particularly serious on soils deficient in magnesia.

³The News and Observer, July 20, 1938, reported an estimated damage of \$100,000 in Harnett County by a hail storm the day before. On June 29, 1938, the same paper reported an estimated damage of nearly \$8,000,000 in 15 counties by recent hail and wind storms. The Yearbook of Agriculture for 1922 estimates total loss in all United States tobacco at 21.3%, of which it estimates climatic damage at 16.2%, plant diseases at .9%, insect pests at 2.7%, defective seed at .1%.

⁴John V. Goodman, Ass't. Director, State College Extension Service, quoted in the News and Observer, June 29, 1938, states that a "substantial portion" of the losses from the June storm

The bright tobacco farmer is inclined, unless restricted by some control measure, to grow as much tobacco as his labor force will permit. He has a regional advantage for production of bright tobacco, and this regional advantage is found in very few other crops in this area. The southeastern farmer must fertilize corn, for example, to rival the production on fertile soils of the Mid-West. He has no large urban markets for dairy products. Grass and feed crops do not thrive in general on his thin, sandy soils, though soy beans and lespedeza do thrive and may supply a regional deficiency in stock feed. Lack of good stock feed has, thus far, made it difficult for the tobacco farmer to grow beef or hogs as commercial products. Cotton can be produced more cheaply on the rich soils of Texas and the states of the "Deep South" than in the South Atlantic area. Truck crops, for which much of the tobacco-growing region has a suitable environment, are limited by the market and offer no great possibility of expansion. Further, tobacco offers very high returns per acre,¹ and a landlord is, therefore, tempted to promote tobacco cultivation on his farm, less concerned over labor involved than would be an owner-farmer.² The result is that the tobacco farmer has little respite during the period when his crop is in the fields. His tobacco occupies most of his time throughout the period, and he devotes any time left over from tobacco cultivation to producing other money crops or subsistence crops for his family and his stock. This situation has been modified in recent years by the

mentioned in n. 3, *supra*, p. 68, will be restored if favorable weather ensues. The plants were young in many of the damaged counties.

¹The *Farm Forecaster*, November, 1937, estimates per acre values of certain crops in North Carolina as follows: 1934--tobacco \$231.00, cotton \$40.07, corn \$15.05; 1935--tobacco \$185.00, cotton \$35.35, corn \$14.06; 1936--tobacco \$173.00, cotton \$38.66, corn \$16.83.

²*Yearbook of Agriculture*, 1926, p. 466: "Tobacco ordinarily requires more labor per acre than any other major crop." Tobacco in south-central Virginia is said in this article to require about 400-500 man hours per acre, while cotton in the eastern states is estimated to require some 100-125 man hours per acre. There is a peak demand for this labor at setting and chopping-out time, when the women and children are called into service, and another at curing time, when the women and children take part once more. In cotton cultivation picking and chopping are the only phases which demand hand labor. The cotton farmer is more likely to employ pickers than the tobacco farmer is to employ choppers or harvesters.

acreage limitations imposed by the A.A.A. and by an increasing emphasis on subsistence crops, but the tobacco farmer is still an extremely busy man throughout the summer months.

Financing the work of cultivation.--The farmer's debts plague him throughout the production period but particularly in mid-summer. Few bright tobacco farmers, be they owners or tenants, have much money left over from the proceeds of the crop. The average farmer goes further and further into debt from January on. His plant bed fertilizer is likely to have been bought on credit. More or less of his food has been charged at the time store, or money for it has been advanced by his backer--landlord, warehouseman, or fertilizer dealer. Fertilizer for the current crop is charged on some one's books. Clothing, school books, lawyer's and doctor's fees are charged somewhere, and at a round interest rate. Everything requiring an expenditure of money is, for many farmers, on "fall credit." The security is the prospective crop. Hence, landlord and warehouseman, time store and local bank, doctor and lawyer and preacher--all wait with the farmer upon the pleasure of the tobacco plant, and all strain with him through the seven or eight lean months from seed-planting to harvest. By laying-by time, the strain tells on the more thoughtful farmers, and even the most happy-go-lucky cropper finds his backer parting more and more reluctantly with the few dollars left in his bank account or his local credit.¹

Priming and curing.--The strain of debt relaxes as the tobacco begins to ripen. The farmer, if all has gone well thus far, feels that he has brought his crop past many a potential loss and that the end is in sight. Landlord and banker, warehouseman and merchant, drop by to talk over the crop. Reports go off to bankers and wholesalers in northern cities. Merchants lay in goods. Automobile dealers polish up their second-hand cars and even buy them from other dealers outside the tobacco area. Government experts estimate the crop. Everyone is talking acreage, body, color, prices. An unfailing optimism grips the countryside--tobacco is about to pay off!

The harvest begins when the first leaves ripen. The plants stand by mid-summer some three or four, or even six feet, high,

¹See North Carolina Agricultural Experiment Station, The Credit Problem of the North Carolina Farmer (Raleigh: North Carolina Department of Agriculture, 1930).

with broad leaves meeting across the rows. About mid-July in the eastern belts or mid-August in the Piedmont belts¹ the bottom leaves, the "lugs,"² begin to turn yellow. They are "prime" for harvesting, and the first "priming" is in order.³ Two men pass along the rows, each breaking off ripe leaves from two rows and handing them to a boy who drives down the broad eighth row a single mule attached to a light cart topped by a sort of burlap hamper (Figs. 7 and 8). The boy lays the leaves carefully flat on his cart and drives each load to the barn (Fig. 9). Here the women and old men of the farm are gathered, with small children playing about and larger children helping as best they can. They work under a convenient shed or under a tree near the barns. The boy unloads his sled to a rough table. A "hander" picks up four or five leaves by the butts, deftly smoothes them and evens the butts, then hands the flat bundle to a "looper." The "looper" stands behind a rack holding a light, four-and-a-half foot "tobacco stick" at almost shoulder level. With a deft flip of the hand she loops a cotton string about the "hand" of tobacco leaves and the stick in such fashion as to hang the "hands" alternately on the two sides of the stick. The operation is swift, and when perhaps twenty "hands" have filled the stick it is taken to the barn and handed to a man inside. This man lays the stick across the tier poles, beginning at the top, until the barn is full. Farmers like to fill the barn promptly, completing it the day in which it is begun, for slow harvesting would confront the curer with tobacco in different states of moisture and freshness.

The entire production process in bright tobacco hinges on a proper cure of the leaf. Bright tobacco farmers have developed a curing barn for this purpose so characteristic of the area and

¹The ripening of the leaves depends on the season, of course, and varies from year to year. In 1938, an unusually early spring and summer resulted in an early crop and priming began in the Coastal Plain about July 1.

²"Lug" is obsolete for "ear."

³Formerly, the entire plant was cut when most of the leaves were prime. Obviously, this meant gathering some leaves when over-ripe and some while still green. Priming requires more labor, but it allows each leaf to ripen and allows filling a barn with leaves which are of more or less uniformity in size, texture, body, etc. Curing is more effective when the barn is filled with leaves of about the same kind.

so well suited to its purpose as to merit description. The curing barn, or the "tobacco barn," as it is commonly called in the bright tobacco country, was built until recently of pine or oak logs, hewed on two sides and notched at the ends, then laid horizontally to form the familiar pen of the log cabin. It was roofed with clapboard or shingles, the roof high-pitched to shed the heavy rains of the region. The logs were chinked with mud or mortar, the single low door was reinforced with a piece of burlap, and the barn was tight, thick-walled, and admirably adapted to conservation of heat. Scarcity of timber in recent years, particularly in the eastern counties, has led to construction of frame barns with galvanized iron roofs. Such barns have tar paper laid on inside the weatherboarding or the clapboards which form the side walls. A few barns have been built of hollow tile (Fig. 10). Farmers say the old log barn is far easier to use than either of the new types, and many new barns are built of logs. Dimensions vary, but not greatly. The barn is about 18 by 18 feet and about 12 feet from the ground to the eaves.¹ As a rule, the barn sits in the lee of some sort of wind-break, and the door traditionally opens down-wind.² Conservation of heat is important not only for saving fuel but for maintaining an even temperature while curing.

Tier poles are set lengthwise the barn at a height of about six feet, and about four feet apart.³ Above this, sets of tier poles are laid at intervals of about eighteen inches to the peak of the roof. On the dirt floor of the barn a fire-box of brick or field stone is built on either side of the door. The furnaces open outside the barn, in most cases under a shed, and inside the barn they connect with a sheet-iron "flue"--an exaggerated stove pipe--which runs across the barn and half-way along the back wall, where it passes outside and turns up as a small

¹The four-foot, six-inch tobacco stick is roughly the unit in areal dimensions, and the length of the tobacco leaf is the unit in vertical dimensions. Dimensions given are inside measurements. The peak of the roof is about five feet above the plates.

²These traditional requirements seem to be met about as much "in the breach as in the observance." Old barns once properly placed may be left defenseless by the clearing of the woods in whose lee they were placed. Convenience may demand that the barns be set in a row alongside a large field or on a road.

³The first tier is set high from the floor to prevent the tobacco from touching the flues.



Fig. 9.--Hauling leaf to the handling shed



Fig. 10.--Three types of tobacco barn



Fig. 11.--An Auction sale.



Fig. 12.--An Old Belt scene

smokestack to about the level of the eaves.

When a stick of tobacco leaves is handed into the barn, it is passed to a man straddling the topmost tier poles. He lays the stick across the tier poles, the leaves hanging down. Tier after tier is filled, until the barn is full. The door is then closed and fires are kindled in the fire-boxes. The flame and smoke are drawn through the flues to escape through the smoke-stack. Thus the barn is heated without smoking the tobacco.

The man who cures the tobacco is an artist. General statements as to his procedure can be made, but his methods will vary with the man, with the heat and humidity of the atmosphere, with the type of leaf, and with the water content of the leaves and their state of maturity. This artist has three tools--the barn, a great stack of "flue-wood" cut to proper length and thoroughly seasoned, and a high grade thermometer hanging just inside the barn door. With these tools he will remove some four to five thousand pounds of moisture from a barn of tobacco¹ and consummate a complex bio-chemical process in which cells are slowly killed by heat and starvation and starches are changed to sugar--and in such fashion as to leave the leaf a bright, golden-yellow in color. He must "feel" his curing, inspecting his tobacco frequently by use of sight, touch, and smell, noting small indications which are quite unintelligible to the layman and probably chiefly subconscious to him. He must adjust his curing to the state of the tobacco--thick or thin, sappy or dry, and he must adapt it to the weather by changing his fire and opening or closing his door. Always he must guard against the ever-present danger of fire.

As soon as the barn is filled the temperature inside is raised to from 5 to 10 degrees higher than the temperature outside--say, to 85-100 degrees, Fahrenheit--and held there for 24-36 hours. The tobacco slowly yellows during this time and when in the judgment of the curer the time has come to "set the color," he steps up the temperature at a rate of 4 or 5 degrees an hour to somewhere between 120 and 140 degrees. Once attained, he holds the high temperature steadily until the leaf tissue is dry. By this time the leaves should be a pale yellow color, the color

¹E. G. Moss and Jas. F. Bullock, The Culture of Flue-cured Tobacco in North Carolina (Raleigh: North Carolina Department of Agriculture, 1933) is the source of this statement and of the statement as to curing procedure which follows.

should be fixed, and the starches should have been converted into sugars. The next, and final, process is "killing out" the tobacco by raising the temperature 5 to 10 degrees per hour to 180 to 190 degrees, Fahrenheit, and holding it there until the stems are dry.¹ When the curer is satisfied, the door is opened, the fire is allowed to die, and the tobacco "comes in order" for handling by absorbing atmospheric moisture, aided in very dry weather by sprinkling water over the hot flues. It is then removed to the pack house, and the barn is ready for another filling. At the pack house, the sticks of cured tobacco are laid in windrows for a few days, the leaves carefully smoothed. It is then re-packed into a roughly cubical pile, butts on the outside and leaves inside, and re-packed from time to time until the farmer is ready to prepare it finally for the market.² About a week is consumed in filling a barn, curing it, and clearing it for the next filling. The curing runs perhaps three and a half to four days and nights. During this time the fire must not go out or even fail enough to let the temperature fall. The curer sleeps at the barn, probably eats his meals there, and can at no time relax his vigilance. The process becomes more delicate and more strenuous as it continues, and the fire risk becomes more and more serious. Any slight error in judgment or any momentary carelessness on the curer's part may result in a poor cure, "barn-burned" or greenish leaves, or in total loss of barn and contents in a half hour of spectacular fire.

Priming and curing go on steadily, once the harvest has begun. The curer goes wearily to his bed when the fires are drawn, but the primers set to work promptly to fill the barn once more. The priming works up the plant from the bottom "sand lugs," to "leaf," to "tips"--probably four primings to each field, and each priming is cured separately and separately stored in the pack house.

¹This "killing out" stage is the one at which the barn is most likely to catch fire. The tobacco is dry and brittle and the flues are red-hot at times. Further, the curer may, to speed up the process, scatter shovelfuls of live coals over the barn floor.

²The tobacco goes through a fermentation process while thus "bulked." The re-packing is to prevent over-heating, and the interval between re-packings depends on the weather and the state of the leaf.

Heavy rains at this season are unfortunate and by no means uncommon, for hurricanes pass along the coast in late summer, bringing heavy downpours to the Coastal Plain and, to a degree, to the Piedmont. Protracted rain will cause the tobacco to "take on second growth," turning green once more, thickening the leaves, and increasing the moisture content. Such tobacco is hard to cure and is likely to show a greenish tinge which lowers its sales value. Priming in the mud is a weary struggle, and wet plants drench the primer's clothes. The "flue-wood" is soaked and hard to fire. Beating rains may depress the leaves until they are spattered with sand and mud, difficult to remove and likely to mean a low price on the market.

Despite the constant labor and anxious care it involves, priming and curing time is rather a gay one on the tobacco farm. Everyone turns out to help, and neighbors exchange labor. The primer views each leaf with affection and handles it with solicitous care. The boy drives his mule cart with conscious pride and the women gossip happily in the shade as they vie with each other in deft "handing" and "looping." The smaller children play near the barn while the superannuated farmers hobble from barn to barn with admonition and encouragement. Even the curer takes pride in his difficult assignment and pleasure in the accomplishment of a finished barn, and the packer lays away the golden leaf with the caressing motion of a banker smoothing a sheaf of currency. The traditional optimism of the harvest season permeates the tobacco section, though the tobacco farmer's task is not yet done.

Marketing the Crop

The local tobacco markets open toward the end of the local curing season. This is about the first of August in the Georgia Belt, and the Border Belt, the New Belt, the Middle Belt, and the Old Belt follow at intervals of about two weeks. Thus the market openings reflect roughly the differences in the maturing season for the several belts and, again roughly, the differences in planting dates.

The eyes of the whole bright tobacco world are on the Georgia markets when they open, for they give the first good indication as to whether tobacco will sell well or poorly. Warehousemen and farmers may go from North Carolina in small parties to attend the opening sales, and their opinions will be eagerly sought

and widely retailed on their return. Actually, there is a wide variation in relative price levels in the several belts, and price levels may fluctuate considerably during the marketing season. There may be an over-production of Type 14, for instance, and a short crop of Type 11; or weather conditions may have induced a poor crop in Georgia, whereas the New Belt may show exceptionally fine quality. The supply of certain leaf types may prove, as the season progresses, to be greater than was anticipated at the opening of the markets, or vice versa.

The North Carolina tobacco farmer's interest in Georgia prices is very real, but it is more akin to curiosity than to the fact-finding of a factory manager. There is little for the individual farmer to do about prices. He can, and does, make a guess as to whether his tobacco is likely to sell better early or late. If he is free to choose, he may "try out the market" in one of the earlier belts before his own market opens.¹ He is likely to have some tobacco on the floor when the local market opens. He may decide that it is well to sell at once or to hold his tobacco until late in the season. He is more likely, however, to prepare it as he can and to take it, load by load, to the warehouse as fast as it is ready. There is no way for him to foretell the course of prices, and his own convenience is likely to dictate the progress of his sales. High prices will speed up the process somewhat and low prices will slow it down, but most growers need the money, and the tobacco crop moves, on the whole, steadily to market.

The market town.--Figure 13 shows the distribution of the 38 tobacco markets in North Carolina, the size of the individual circle indicating the relative importance of each market center in the 1937-1938 sales. If all of the markets are considered, irrespective of size, it will be seen that they are well distributed over the growing areas (Cf. Fig. 3), and that most tobacco growers have a market within 12 or 15 miles--about the limit of convenience for horse-drawn conveyances. Generally speaking, there is one market to a producing county, and 23 of the 38 markets are in

¹One Caswell County farmer known to the writer took a load of tobacco to the market opening in Lumberton, in the Border Belt, in 1938. His nearest neighbor thought him foolish and proposed to market as near home as possible. Each farmer makes his own decisions, unless he is under obligations to some one who demands control of marketing.

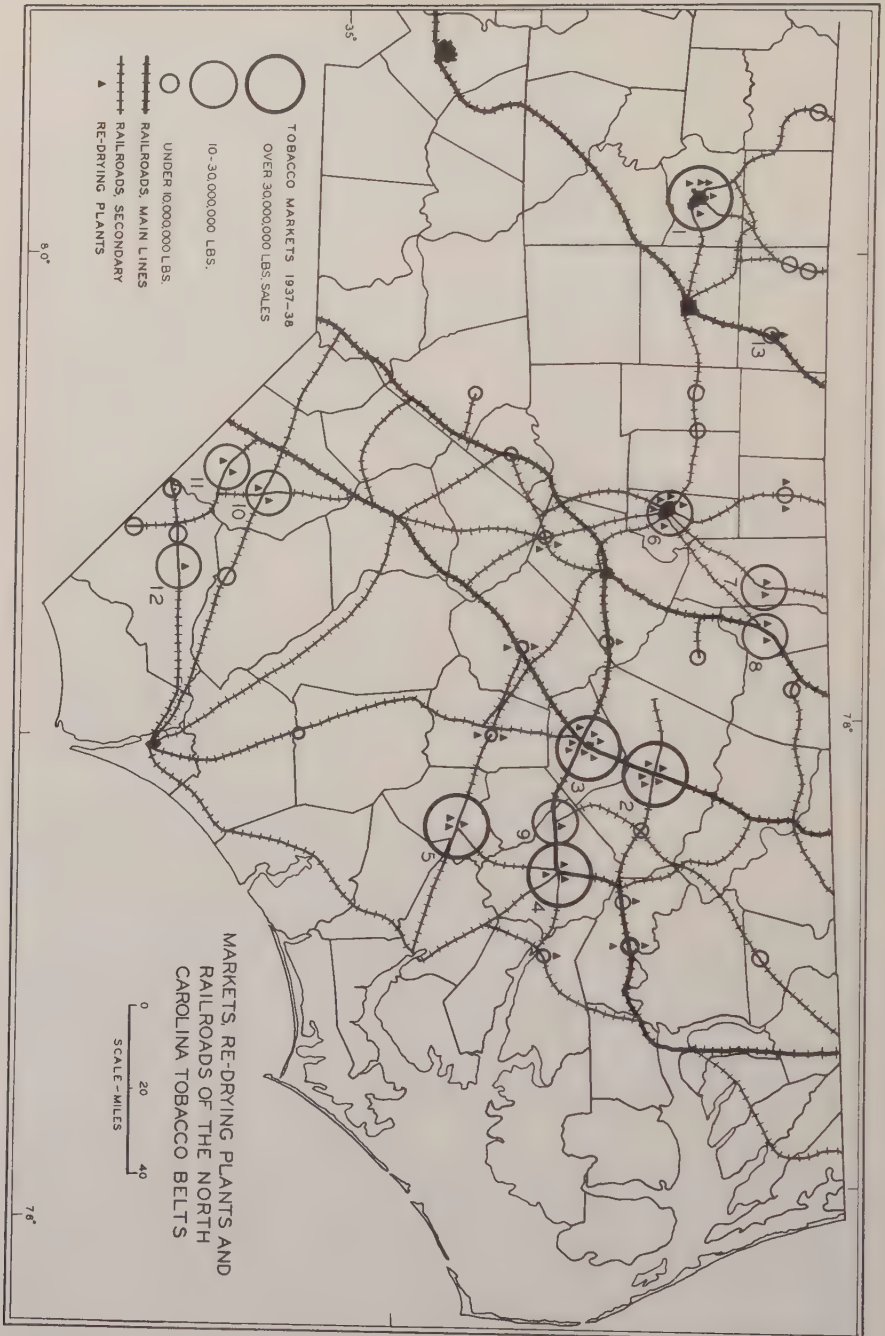


Fig. 13.--Markets, re-drying plants, and railroads of the North Carolina tobacco belts.

county seats. Most of the markets are in the principal trading centers of their respective counties.¹ All markets are on railways, but there is no marked concentration of them on main lines (Fig. 13). The leading 13 market centers are numbered in Figure 13 and are subsequently referred to by number as well as by name.²

If the five markets with sales of over 30,000,000 pounds each are considered--Winston-Salem (1), Rocky Mount (2), Wilson (3), Greenville (4), and Kinston (5), it will be seen that four of them are in the heart of the area of most intensive tobacco production (Cf. Fig. 3). The fifth, Winston-Salem, is a great tobacco manufacturing town, and tends, therefore, to draw tobacco from a large area. If the markets of the next rank are considered, it will be seen that one, Durham (6) has a marginal location with regard to tobacco production. Durham, like Winston-Salem, is a great tobacco manufacturing town. The remaining markets of this rank--Oxford (7), Henderson (8), Farmville (9), Lumberton (10), Fairmont (11), and Whiteville (12), are in areas of heavy production (Cf. Fig. 3).

Most farmers sell at the nearest market, but many of them in areas tributary to small markets take a part of their crop to the great markets, and thus swell the offerings of the local producing areas of such markets as those at Winston-Salem (1), Durham (6), Rocky Mount (2), Wilson (3), Greenville (4) and Kinston (5). The farmer feels that the presence of many buyers at these markets makes for greater competition and, consequently, higher prices. It is doubtful, however, whether this is true to any considerable degree. A buyer can view only a limited number of tobacco piles in a day, and a given warehouse space can accommodate only a limited number of baskets. Concentration of tobacco in one town means more buyers in toto, but not necessarily more bidders on any one lot of tobacco. In any case, the small markets persist.

¹There are striking exceptions to this statement. Raleigh (some 20 miles southeast of Durham [6] in Fig. 13) and Greensboro (the railway center some 25 miles east of Winston-Salem [1]) are important trading centers, but the markets are in smaller centers within their trade area. Neither of these towns has much tobacco production in its immediate neighborhood.

²Reidsville (13) is numbered because of its importance in manufacturing. It has a fairly large market, of the third rank in this classification (Fig. 13).

The writer could learn of only one North Carolina market which has closed in recent years.¹

The warehouses, perhaps two to ten of them, are located, as is the town's commercial center, with reference to roads leading into town from the tobacco country.² The warehouses, therefore, are close to the heart of the town. These warehouses are sheds of large proportions,³ usually with floors raised some four feet above inside driveways at both sides of the buildings. The ends and sides of the warehouses are enclosed with weatherboarding, galvanized iron, or brick, and the floor space is open except for pillars supporting the roof and office enclosures at the entrances. The roofs are rather steeply pitched, for this is a region of torrential rains, and closely set with skylights, for light is necessary if the buyers are to give tobacco instant appraisal. Artificial light is unsatisfactory, since color is an important item in grading. Only offices and sleeping rooms are heated (Fig. 19).

Besides the warehouses, the market town has other tobacco-handling facilities commensurate with its importance as a market. Large markets will have re-drying plants with packing and re-prizing departments and "factories" which in many cases include stemming, re-drying, re-prizing, and re-packing departments. Thus, Wilson has ten "factories" and seven re-drying plants.⁴ The town is geared to tobacco production in many ways which make no distinctive mark on the landscape. The banks are organized to carry long-term credit through the growing season, and to pay out very large sums of cash daily during the market season.⁵ The re-

¹This market was in New Bern, at the head of the great estuary (Fig. 13) southeast of Kinston (5). A glance at Fig. 3 will show that this market was located in an area of small tobacco production.

²Winston-Salem, Burlington, and Durham draw most of their tobacco from lands to the north of them. Their warehouse districts are adjacent to, and on the north side of, the respective commercial centers.

³For example, Greenville advertises 10 warehouses with a combined floor space of 16 acres. Rocky Mount advertises 10 warehouses with combined floor space of 500,000 square feet.

⁴Advertisement in News and Observer, August 23, 1937.

⁵A few daily reports selected at random from the News and

tail merchants stock goods for a rush fall season and thin buying during the other three seasons, eating places catering to the farmer prepare for a rush season of three months or so, and used-car dealers accumulate cars for the tobacco marketing period. The whole town is set to the rhythm of tobacco production and tobacco sale.

Market towns compete vigorously with each other, as do warehouses in any one town. State and local papers carry elaborate advertisements for the town and for the individual warehouse, promising the "high dollar," ample accommodations, a cordial reception, a large number of bidders--any and all the things calculated to lure the tobacco trucks their way. Signs along the highways blazon the merits of "Wilson, the World's Greatest Market," "Farmville, the Friendly Market," "Star Warehouse, the Farmer's Friend." Moreover, there has been a steady cultivation of farmers throughout the year. Each warehouseman and each banker has country friends, attends country revivals, picnics, funerals, fish-fries, fish-muddles, and barbecues as faithfully as any politician. He drives about the countryside during the summer, stopping to chat with farmers along the way. He "backs" a selected list of farmers, as does the time merchant, with the understanding that the farmer shall do business with his warehouse or the one affiliated with his bank. The farmer takes the attention lavished upon him with a canny bit of salt, but many have developed real friendships with individual warehousemen and strong loyalties to certain towns and certain merchants. Where such attachment exists, the farmer's choice of a market is made beforehand. In many cases, indebtedness of one sort or another, or, in the case of a tenant, the preference of his landlord, may decide this choice in advance. The foot-loose farmer will go very largely upon his general convenience, or a "hunch," or momentary whim. The general attendance at any given market, however, is from the immediate countryside, the trade area of the market town. There is always a sprinkling of strays, particularly at the larger markets, who are quite unknown and may have come long distances. These farmers will usu-

Observer for 1937 will show the amounts of cash paid out at various small towns: August 26--Williamston \$54,241.20, Goldsboro \$43,362.25; September 2--Kinston \$183,233.74, Wilson \$178,443.26; September 13--Rocky Mt. \$252,425.66, Wilson \$309,855.80, Greenville \$351,335.20; October 5--Rocky Mt. \$403,167.02, Williamston \$63,576.70.

ally arrive in late afternoon or early evening and sleep, rolled up in old bed quilts, in the warehouse or in their trucks. The whites are likely to hold the office, with its stove, and the blacks the trucks or the warehouse floor. Some of the warehouses in larger centers provide rooms and cots for both whites and blacks.

Ordering and grading.--When the farmer decides that it is time to market a part of his crop, he takes the leaf from its "bulk" in the pack-house to the "ordering room"--in many cases a half-cellar adjoining the pack-house. The tobacco is of a certain homogeneity, for it came from the same priming and the same barn and it went through the same "sweat" while bulked. It is now allowed to absorb moisture in the damp ordering room, or sprinkled if necessary, until it is "in order" for handling. The soft, pliant, moist tobacco is next taken to the grading room and laid out on a table in front of a north window. The "hands" are taken from the sticks, untied, and smoothed. Then the grader, standing with his back to the window, grades each leaf on color, body, elasticity, freedom from worm holes, gumminess, length, breadth, and so forth. The barnful of roughly homogeneous leaves is subdivided thus into four or five piles, each of which the farmer considers essentially uniform in grade. It is very important that the grader be skilled in his work and that he grade honestly as well as intelligently, for a mixture of good and poor leaf is quite likely to bring the price of the lowest grade represented. Farmers are tempted to "nest" inferior tobacco inside a "hand" of prime leaves, to dampen the tobacco unduly in order to increase its weight, or otherwise to attempt to deceive the buyers. The buyers are on the alert for such trickery and are very likely to punish the culprit by bidding his tobacco in at very low prices. Much tobacco is graded poorly by honest graders, however, and speculators called "pin hookers" make their living by buying poorly graded tobacco, regrading it, and selling it at the true market value.¹

¹The United States Department of Agriculture has for some years co-operated with the State Department of Agriculture in conducting a campaign for educating the farmers in grading tobacco. Grading schools are held at various places and times, bulletins are issued and articles published in newspapers and farm journals. In addition, tobacco specialists have been provided who will grade a farmer's tobacco for a small fee. The Congress passed an act

Selling at auction.--Having graded the tobacco according to his best judgment, the farmer loads it into his truck or into the back seat of his automobile, covers it with an old bed-spread, and goes to his chosen market town. Now, indeed, does he "put Fortune to the touch"! He does not know how buyers will grade his leaf, what they will pay for any particular grade, or why they will pay it. He will not even understand what price his tobacco is bringing until the sale is over. He goes alone and blind into a market in which the buyers are experts backed by giant corporations or even by foreign governments. He sells a hundred pounds or so at a time to men who think in terms of averages for millions of pounds. He sells the product of more than a year of labor and worry to men who pause some ten seconds at each basket,¹ appraising, bidding on, and buying, a one man crop of perhaps 2,000 pounds in not more than three minutes.

The farmer typically starts for the nearest market before dawn. He drives some two to ten miles, arriving between five and seven in the morning. He falls into a line of trucks moving slowly into the driveways of the warehouse. He moves with the stream until, in his turn, he is greeted by a warehouseman, clapped on the back, called by name, and told where to unload and where to lay out his tobacco. The scene is a busy one. Under dim electric light, dust thick in the air, farmers are unloading their tobacco into broad, shallow baskets provided by the warehouse. Only one grade (the farmer's grade) of tobacco is placed in a basket, so a basket may hold a one-foot pile of leaf and perhaps 100 pounds in weight, or it may be loaded with a four or five foot pile and weigh several hundred pounds. The trays are rolled by warehouse workmen on special wheelbarrows to the appointed place in the "break," after being weighed and tagged with the owner's name, the weight, and a warehouse number. The "break" is a line of baskets reaching the length of the warehouse, with about a two foot aisle on either side (Fig. 11). Once the farmer has

in 1935 authorizing the farmers who use any given market to request, by a two-thirds vote, that the market be placed under inspection by agents of the United States Department of Agriculture. Three markets--Goldsboro, Farmville, and Oxford--voted such a request and were assigned tobacco graders through whose inspection all tobacco offered for sale on those markets must pass.

¹Chief Justice Charles Evans Hughes opinion quoted in News and Observer, January 31, 1939.

seen his tobacco in the "break"¹ and properly ticketed, he goes to breakfast and to hobnob with his peers until the market opens. The market opens at ten, by which time the light is likely to be good enough for the buyers. Warehouses rotate the first sale, and the farmer knows approximately the time for sales to begin in his warehouse.² When the time comes, there is a group assembled at the head of the first break. The auctioneer stands beside the first pile, checking the attendance of buyers. The warehouseman is standing by. A group, six to ten or fifteen, perhaps, of buyers is assembling. A few outsiders and a straggling group of farmers are on the outskirts of this group. The auctioneer glances around, looks to the warehouseman for agreement, and swings into his particular version of the incredible auctioneer's chant. The warehouseman gives a whoop, picks up a few hands of tobacco and holds them for inspection, and shouts the price per pound below which he thinks the tobacco should not sell. The auctioneer fits the figure into his chant, the buyers glance at the tobacco and possibly pick up a hand or so to feel, smell, or see more closely. The individual buyer makes his bids in ways imperceptible to the layman but quite clear to the initiate--a hat pushed back or pulled down, a wink, a shrug, may indicate that he will buy at the price being chanted. The auctioneer shifts quickly from figure to figure until he reaches what he considers the top bid, then passes with a single stride to the next pile, followed by his motley group (Fig. 11). A warehouse clerk enters the name of the buying firm or person, and the price bid, on the "tag"³ and he, too, passes to the next pile. The whole operation consumes perhaps ten seconds. Now the farmer is free to approach, read the price bid, and, if he wishes, to refuse the sale by turning the tag upside down in the slot. For most farmers the refusal of a bid is practically impossible. Within the hour, the farmer can go to the warehouse office and receive a check for

¹"Break" is a survival of the old practice of selling tobacco in hogsheads which were broken for inspection and lined up across the warehouse floors.

²Where the market is large, there may be several sets of buyers. Lumberton had three sets of buyers in 1938, Rocky Mount had four sets, and Greenville had five. There are as many sales going on simultaneously as there are sets of important buyers.

³The "tag" is a sheet of cardboard set into the cleft end of a small stick and stuck upright on the pile of tobacco.

the tobacco sold, warehouse charges deducted.¹ This check he can, and usually does, cash at a local bank.

This marketing system has long been viewed by farm leaders as one of the weakest bits of the bright tobacco farmer's machinery for using his climate and soil in making a livelihood.² The farmer's lone position in the face of powerful buyers has been noted, and his utter ignorance of the market. The unintelligible chant of the auctioneer means nothing to him. There is no bargaining, no give and take between him and the buyer. It is purely a buyer's market and a contest among a very few buyers, except for the warehouseman. The warehouseman is paid a percentage of the sale total, so his interests lie with the farmer's. An essential weakness, in addition to those noted, is the speed of the sale. Buyers make a rough appraisal of any individual lot of tobacco, for they count on the average of their judgment in thousands of transactions. The farmer, however, has no great spread of sales, and it easily can happen that his offering goes for an uncommonly high or low price for its particular quality at that particular time. The whole transaction is cloaked with secrecy. A fundamental difficulty is that the farmer and the buyer have no mutual understanding as to grades. The farmer does not know what the buyer wants or what he will pay for it. The farmer's grading consists of putting leaves together which seem to him essentially similar. The buyer has a set of grades, indicated by code marks changed annually or oftener. These grades are kept secret, as is the ultimate use of the tobacco thus graded. The Federal Government may eventually put into effect compulsory grading according to the system of grades set up by the United States Department of Agriculture in 1923 but not thus far accepted or used by buyers.³

Settling up.--Production is over, so far as the farmer is

¹These fees are set by state law in North Carolina--a weighing fee of ten cents per 100 pounds; an auction fee of fifteen cents per basket of 100 pounds or less, and of twenty-five cents per basket of over 100 pounds; and a warehouse commission of two and a half per cent of the gross sale. The total percentage cost for selling varies, depending on price and quantity.

²See Gage, op. cit. or Woofter, op. cit. for extended discussions of the marketing system.

³Supra, p. 82, n. 1.

concerned, when he lays his tobacco on the warehouse floor. It remains to get his check and liquidate his obligations. If he is a tenant, his landlord must be satisfied.¹ The fertilizer man and the time merchant may have crop liens, and they must be paid. A host of other creditors are waiting for their share of the tobacco money--the doctor, the lawyer, the used-car salesman.² Vendors, too, are awaiting the farmer, ready to sell him any and everything for cash. Collectors and vendors are waiting in the bank or in a group outside. The landlord and the fertilizer man are probably inside the bank and they take their proportionate share in relative calm and dignity. The creditors and salesmen outside the bank may follow the farmer to his truck, where his "women folks" are waiting to begin a shopping tour. It is a wise, forehanded, and fortunate tenant, white or colored, who takes home cash or leaves a balance in the bank. Most tenants, certainly, are "on credit" very shortly after the last pile of tobacco has been sold--and production of the next crop has probably already begun. The thirteen-month crop gives the farmer ample time for anticipating, but little time for enjoying, its spectacular pay-off.

Three Type Farms

The foregoing general statements as to bright tobacco production are supported by detailed study of a type farm in each of the three clearly delimited belts. The fourth belt, the Middle Belt, is not sharply distinct from the Old Belt to the west

¹There are several standard types of tenantry, varying somewhat in different areas. Roughly, the "cropper" supplies the labor and half the fertilizer, the landlord supplying everything else and receiving half the cash income. The "share tenant" supplies the labor and tools, the work stock and food for the work stock, and two-thirds or three-fourths of the fertilizer, taking two-thirds or three-fourths of the money. The "cash renter," very rare in tobacco areas, supplies everything but the land, with its buildings and fuel supply, and pays a cash rental. See Rupert B. Vance, Law and Contemporary Problems, Vol. I (Durham: Duke University Press, 1934). See also S. H. Hobbs, North Carolina, Social and Economic (Chapel Hill: The University of North Carolina Press, 1930), Index, for a general discussion of tenantry.

²The author watched an old Negro preacher standing just outside the bank doors in Wilson, accosting his scurrying parishioners with: "How 'bout a little fuh de Lord, Brother!"

or the New Belt to the east. It seems unnecessary to present a type study of this producing area, since it represents merely a transition from one distinctly characterized belt to another.

Though all the belts are broadly similar, minor variations are to be found both in the environments in the several belts and in the tobacco farmer's adaptations to environmental conditions. Old Belt farms, on the rolling topography of the Piedmont, have more woodland and larger total acreage than farms of the almost level New and Border Belts, but their cultivated acreage is smaller. The Old Belt has more owners and fewer tenants than the New and Border Belts, though tenantry is high in all the tobacco districts.¹ New Belt farms seem, from observation and from conversation with farmers, farm agents, merchants, and bankers in the area, to be small individually but to show a trend toward consolidation in ownership, a few owners in each community controlling a number of farms.² Tenantry is high in the New Belt, and the number of Negro farmers is high. The Border Belt has a number of large farms, reminiscent of the plantation except that the owner is likely to live in the community trading center. Tenantry is high in the Border Belt, and many of the tenants are so-called Indians, though their ethnic classification seems doubtful. The old establishment of tobacco in the Piedmont and the lack of other cash crops probably leads to more careful tobacco farming in the Old Belt and Middle Belt as compared with the New and Border Belts. In general, however, farm procedures are much the same.

Contrasts in the land use patterns of the Piedmont Old Belt and the Coastal Plain New Belt and Border Belt are shown in Figures 14 and 15. Figure 14 shows a typical land-use pattern

¹See Hobbs, *op. cit.*, pp. 76-77, 120-21, and map on p. 122, for tenancy ratios and distribution. Two typical Old Belt counties, Caswell and Rockingham, show in the Census of 1930 average size of farms, 78 and 72 acres, respectively; and average crop land harvested per farm, 16 and 15 acres, respectively. Two typical New Belt counties, Lenoir and Nash, show, respectively, 48 and 41 acres per farm, but 22 1/2 and 20 acres of crop land harvested.

²This composite plantation is difficult to discover in farm statistics, since the farms are listed separately. Time merchants are in many cases more or less involuntary plantation owners, having taken farms for bad debts. Large owners tend to be reticent as to their holdings.



Fig. 14.--Airplane view of an Old Belt tobacco area

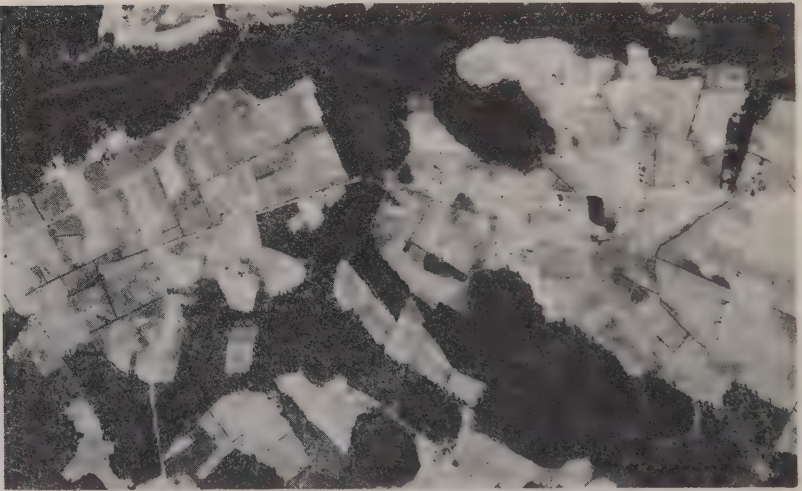


Fig. 15.--Airplane view of a Coastal Plain tobacco area

for the Old Belt. Most of the cleared areas are on divides between creeks, though some of the bottom lands are farmed. Careful scrutiny will reveal a number of recently abandoned fields in various stages of reforestation and the encroachment of gullies on the margins of cultivated fields. Figure 15 shows a fairly typical land-use pattern for the Border Belt or the New Belt. Here the cultivated areas are much larger than in the Old Belt, and they occupy the better drained lands between the swamps which show as forests in the photograph. Abandoned fields show here near the margins of the swamps. Erosion is very serious on the sloping farms of the Old and Middle Belts but of little importance in the level New and Border Belts.

An Old Belt farm.--Fairly typical of Old Belt farms is one in south-central Caswell County, a few miles from the farm on which bright tobacco is supposed to have originated.¹ This farm of approximately 100 acres is an irregular-shaped unit as shown in Figure 16. The extreme western point of the farm is crossed by State Highway Number 14. The building on this point is a filling station operated by one of the farmer's sons. From the state highway a farm road runs on a diagonal along the northwestern border of the farm. At about a middle point on the border the road turns right and follows the flat-topped stream divide along which the farm buildings are located. From this divide the land slopes to the north on the one hand and to the south and east on the other in a succession of small gently-rounded ridges and hills, separated by shallow valleys. Except for the areas left blank, all the land within the farm boundaries has a slope of over five degrees. In the areas already destroyed by erosion the original slope probably averaged nearer ten than five degrees. The soil in the western third of the farm is Cecil clay loam and since it is too heavy for bright tobacco it is devoted to wheat followed by clover. The soil in the eastern half of the farm is the light gray Iredell sandy loam and is used mainly for corn and tobacco. A narrow strip of transitional soil lies between the Cecil clay

¹This farm was selected after consultation with the county farm agent, study of county farm statistics, and a reconnaissance of the Old Belt. An effort was made to avoid show places and master farmers, but closer acquaintance led the writer to believe that the owner and his family were above average personally, though about average as to farm practices and financial success. Caswell is the county to the east of "Reidsville" in Fig. 3.



loam and the Iredell sandy loam. This belt extends from north to south through the area occupied by the farmstead. Much of this transition soil is in pasture. Only the four corners of the farm are in timber (Fig. 16). The two eastern corners are in second growth pine whereas the western two are in hardwoods. The eroded land in the southeastern part of the farm is growing up to a tangle of briars, mullein, bushes, and dogwood. Some scattered stands of pine suggest that eventually this area will be covered with pine, as probably it was before the farm was cleared.

The economy of the farm is suggested by the farm buildings which, in order from west to east, include a frame tenant house on the north side of the road with a cow shed opposite it, a barn with a small storage barn behind it, an old irregular-shaped dwelling built of oak logs with a chicken house and a smoke house east of it, and finally the four tobacco barns which are essential to the cash income of the farmer. None of the buildings are painted. The farm is part of a thousand acre ante-bellum plantation. It was bought by the present owner's father, held by the present owner until 1920, when he sold it and occupied another farm until 1929. In 1929 he repurchased his birthplace and he has farmed it for the past ten years. He owns the farm, with no mortgage against it. He has nine children, five boys and four girls. One son is married and lives elsewhere, one operates the filling station at the western tip of the farm, two sons about 18 and 20 years of age help operate the farm and a smaller son, 12, helps with light tasks when not in school, as do the three older girls. The wife, the older girls, and the small boy help with chopping, weeding, and curing, and a smaller girl about 6 brings water to the fields in times of stress. As the dwelling has only three rooms and a loft, the older boys occupy the tenant house. There is no water for the household except from a spring perhaps 100 yards north of the dwelling and down a steep ravine. A crude wash-bench and tub here should probably be counted as a part of the farmstead. A fence runs about the farmstead, and in 1938 two milk cows were pastured here for a part of the time. In addition the farm had, in 1938, three head of beef cattle, five hogs, and some 35 to 40 chickens. Three small, well-kept mules were the farm work stock. Transportation was furnished by a Ford touring car and a wagon.

This Old Belt farmer grows most of his food and thus to a

notable degree his farm and other Old Belt farms in kind represent the subsistence type of farming. The wheat grown on the Cecil clay loams of the western part of the farm produces very poorly; nevertheless, the crop commonly yields enough flour for the use of the family. The clover is cut for fodder to carry the stock when the pasture cannot be used. The corn on the six fields devoted to it in 1938 appeared to be thriving, partly because some fertilizer intended for tobacco was used to side-dress the corn; an unusual procedure in the Old Belt. The corn is used both for corn meal for family use and as feed for the livestock. The small permanent garden near the farmstead and the large well-kept garden near the center of the farm produce beans, tomatoes, cucumbers, squash, collards, cabbage, Irish and sweet potatoes, turnip greens and other vegetables. Surplus garden products are picked and canned or stored for winter use, and the gardens normally supply all vegetable food for the entire year. The large garden is shifted about over the eastern half of the farm from year to year as convenience dictates. The farmer cuts his supply of fire wood from the stands of hardwood and pine at the corners of his land.

Tobacco is the farmer's one cash crop. It is grown on the eastern, light-soil part of the farm, rotated in no set fashion with corn, vegetables, and pasture. Either corn or vegetables usually follow tobacco to "catch the fertilizer" left in the soil after the tobacco crop is harvested. The considerable area of fallow land in this part of the farm may indicate lack of labor to farm it or unfavorable weather at planting time, but in many cases in the Old Belt leaving a field fallow is merely the first step in an unplanned abandonment of land. The less profitable fields are allowed to lie fallow for a year or two, they grow up in briars and small trees and then require clearing if they are to be farmed again. The outcome is that eventually the land is reforested, perhaps to be cleared again and farmed as "new ground" half a century later.

The tobacco acreage allotment under the Agricultural Adjustment Administration was seven and one-fourth acres for this farm. A severe attack of blue mold in the spring of 1938, on this and neighboring farms, made it impossible to set more than five acres, though the two plant beds on this farm, as on most Old Belt farms, were separated by about a quarter of a mile in the hope that one or the other would escape infection. The to-

bacco had to be replanted twice on account of blue mold, and the final stand was uneven on perhaps two-thirds of the acreage.

No cover crops, as such, are grown. The owner fears to grow legumes on tobacco lands, and the Soil Conservation Service refuses "benefits" on the farm, holding that practically all the land slopes too steeply for cultivation. The western part of the farm ordinarily sown in wheat, grass, and clover has benefit of cover, though the crops are not sown for that purpose. The eastern part of the farm carries clean-cultivated crops or fallow and the crops are grown with no regard whatever for steepness of slope. The result is terrific erosion. Already the southeastern section has been destroyed by erosion, and erosion threatens the southern borders of the fields now in cultivation. Sheet erosion is active on the eastern hilltops and gentler slopes, and shoe-string gullies form each year in fields and pastures. The topsoil on some of the hill tops is less than two inches deep. The "B" horizon is being farmed. Sheet erosion is active in the pastures and wheat lands of the western half of the farm also, and, though gullying is not serious, the topsoil of the hill tops and slopes is not more than two inches or so deep. Here, too, it is horizon "B" which is being used for crop production. The valley bottoms are subject to flood, as shown by drifts of recently deposited alluvium. They are devoted largely to forest or permanent pasture. Crops and woodland appear to have shifted over the farm in a pattern slowly but constantly changing--forest, crop land, fallow, forest, and "new ground" following each other in a constantly descending cycle of productivity.

The work program of this Caswell County farm is typical of the majority of farms in the Old Belt. There are almost infinite variations in details, but in general practices on one Old Belt farm are repeated on the others. On this farm, work for the next crop may begin while the previous crop is still being marketed, for flue-wood is cut and hauled to the barns at odd times from December on, and a part of the tobacco crop may be marketed as late as January. The plant bed is prepared, usually burned, and sowed by the middle of February. Sticks are inspected and renewed if necessary. Flues are checked, furnaces repaired and roofs of barns patched. All minor tasks are attended to during the winter and early spring. The land is broken about the middle of April with a one-horse plow, thoroughly pulverized with an

iron-tooth drag, and then thrown into low beds. These beds are split with a light plow and some 800 pounds of commercial fertilizer to the acre are drilled into the row with a corn-planter. The beds are covered again, and the field is ready for the tobacco plants.

Some time between the last week in April and the last week in May, depending largely on the weather, the plants are drawn from the beds and set in the fields with the aid of a small hand-planter. This work is normally done by the father and the two older boys. If weather has delayed transplanting until late in the season, or if a long dry season makes it necessary to haul water and water each plant as it is set in the field, the younger boys may be kept from school for a day or two to help. In 1938 the farmer set 20,000 plants on five acres. This is about the traditional spacing in the Old Belt.

Cultivation begins a week or ten days after the plants have been set in the fields. A cultivator "throws out the middles," leaving a strip some six inches wide on either side of the plants. This strip is then chopped with hoes, the entire family assisting. The men run the cultivators and help with the chopping, and the women and younger boys chop as steadily as other tasks allow. As a rule, this is the only hoe cultivation. Following chopping the crop is cultivated at intervals of about a week. Five cultivations are typical. On this farm and other farms, a sixth cultivation is given if grass is bad or a beating rain seems to have packed the ground very tightly. It is a very shallow cultivation, for the roots of the plants have by this time grown far out into the middles of the rows. There is some breaking of leaves if growth has been normal, so the farmer must judge as to whether the benefits of this last cultivation will exceed the probable injury.

The farmer tops his tobacco about the middle of June and it is "worm-and-suckered" once a week thereafter until priming begins about the middle of August. In 1938 eight barns were cured, producing something over 4,000 pounds from the five acres planted. The curing procedure is much the same as in other sections of the bright tobacco area. It is varied by the condition of the tobacco and the state of the weather. Curing commonly is over by about the middle of September. Most of the tobacco on this farm is likely to be sold by the middle of October, though

the owner varies his marketing practice considerably, following "hunches" as to whether the early or late market will be better. Some portion of the crop is likely to be held until December. Most of the tobacco is sold in Danville, Virginia, some twenty miles to the north, but the owner takes an occasional load to other markets within a radius of about fifty miles and even took one load, in 1938, to South Carolina.

The farmer is quite reticent as to his financial operations, as are most Old Belt farmers, but he complains that he cannot grow the best grades of tobacco, as he did some years ago. His 4,000 pounds of tobacco brought him less than \$1,000.00 gross, in 1938. He considered that his net profit after paying for his fertilizer was enough to pay wages for his labor and nothing for the rent of his land and barns.¹ However, he grows enough wheat to supply his bread, enough pork to supply his meat, and enough vegetables, eggs, and milk for the use of his family. He has contrived to send all his older children through high school and proposes to do the same for the younger ones. He and his family are clean, self-respecting, and apparently healthy, and they work together on their lean acres in a spirit of co-operation which many a more wealthy family might envy.

The owner is quite aware of the wastage of his fields and attributes it to tobacco. He can see no escape, however. He tried, in 1938, to go into beef-raising in a small way, but he was confronted with a heavy tax when he sold his beeves in Danville. He is poorly located for dairying. He is too far north for cotton. He feels that his only resource is subsistence, plus tobacco, and he plans to continue farming about as in the past, watching his fields erode away from year to year. "We can put the children through high school and turn them loose. I reckon

¹The owner's son reported that an agricultural class at nearby Yanceyville kept careful accounts on local tobacco production in 1936. They found that the average cost of fertilizer and labor per acre was about \$150.00, and the gross return per acre, though it varied widely, averaged about \$200.00. The owner pays from \$28.00 to \$34.00 per ton for his fertilizer and applies about 600 to 800 pounds to the acre. His allotment in 1938 was 7.1 acres of tobacco. He plans to set 10 acres in 1939, in the absence of any legal control. The *Farm Forecaster* for November, 1938 gives the average gross per acre return for the county, in 1937, as \$172.00.

the farm will take care of the old lady and me."¹ This remark of the owner could well be applied to Old Belt farm lands in general. Under present practices, tobacco production in the Old Belt almost certainly will decline in the future.

A New Belt farm.--A fairly typical New Belt farm² is one of about 165 acres in extreme southeastern Wayne County, some five and a half miles west of Mount Olive, a town of about 3,000 population, and about fifteen miles from the county seat, Goldsboro, a city of perhaps 15,000. This farm is one of a number owned by a large "time store" in Goldsboro.³ It is under the supervision of an overseer employed by the store, and is operated by a colored share-cropper who farms most of it, and a white share-cropper who works a part of this farm and all of an adjoining farm owned by his mother.

This New Belt farm has an irregular shape, as shown in the accompanying Figure 17. From the public road at the west it appears in winter as a yellowish-white expanse of level sand stretching eastward to a woodland border a half-mile away. In summer the farm is a blanket of green. The scene is typical of most of the New Belt, for the area is interspersed with large forested swamps and many of the farms lie between arms of these swamps. The land of this farm slopes very gently from the west toward two swamp "runs" which form the northern and eastern boundaries of the eastern "annex" (Fig. 17). An elaborate system of ditches is needed here, as on most New Belt farms, for proper drainage of the soil.

The western rectangle is largely cleared and cultivated. From the public road eastward to a belt of fields marked from

¹The Federal Government is at present (May, 1939) making preliminary surveys for a complicated appraisal of the lands in this neighborhood and in several adjoining counties of the Old Belt, with the purpose of acquiring lands unfit for cultivation and setting up a national forest. This procedure, if consummated, will return a large part of the Old Belt to the forest.

²This farm was selected on the advice of the county farm agent, after reconnaissance of the general area. For the location of the farm see "2X" in Fig. 2.

³The "time store" is a standard institution in the tobacco belts. It is a general store organized to extend long-term credit to farmers. Farmers buy throughout the year and settle accounts when they sell their crop. The difference between cash prices and "time" prices is quite considerable.

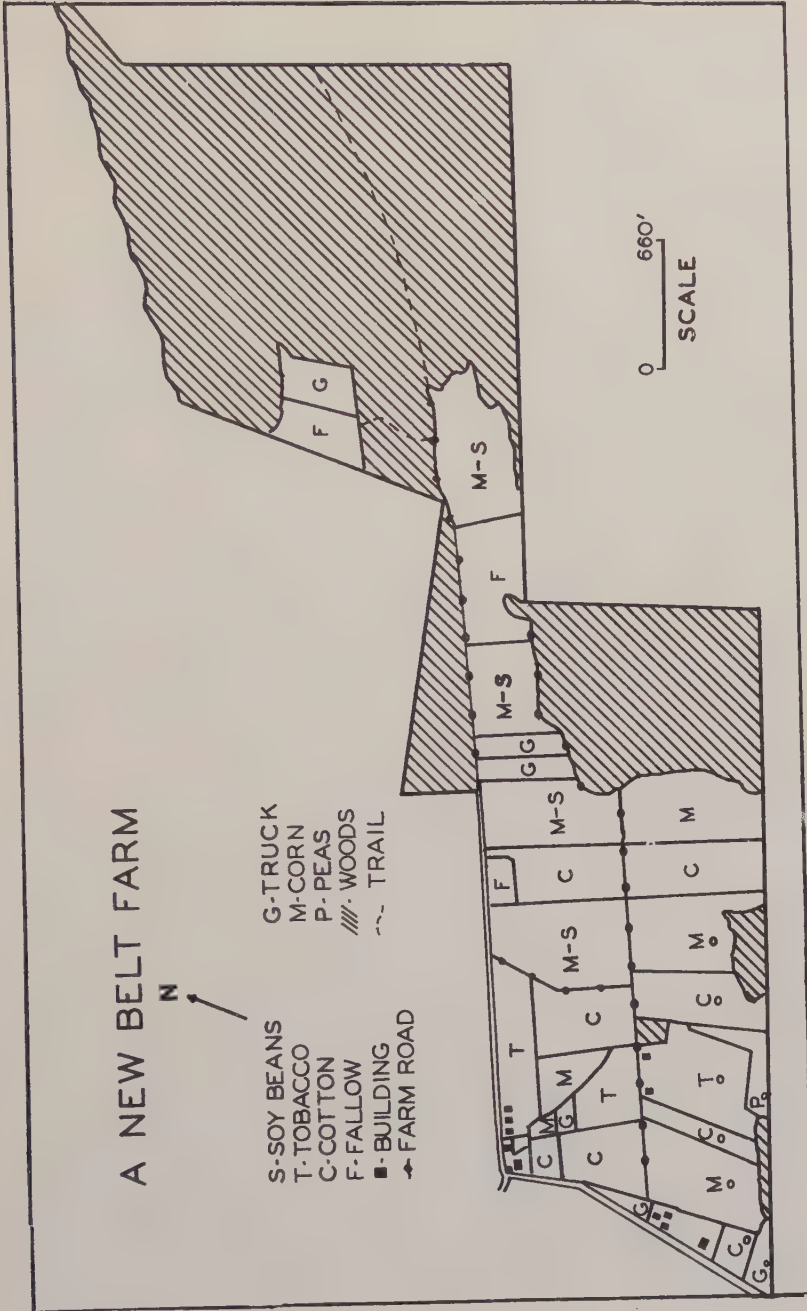


Fig. 17.--A New Belt farm

north to south (F), (C), and (C) (Fig. 17) the soil is Norfolk sandy loam. The soil of the north-south belt of fields is Portsmouth sandy loam. East of this belt and including most of the farm "bottle neck," is Norfolk fine sand, about half cultivated and half in woods. The eastern "annex," practically all wooded, is Ruston sandy loam except for narrow strips of swamp along its northern and eastern borders. Except for the belt of Portsmouth sandy loam, all these soils are well suited to tobacco, cotton, and truck. The fact that the Norfolk sandy loam is practically all cultivated and carries nearly all the money crops of the farm seems to be due more to its location at the front of the farm than to any superiority over the Ruston sandy loam or the Norfolk fine sand. Farm operations require a quantity of wood, and it is more convenient to grow it in woodlands at the back of the farm and to devote the land near the public road to crops. The watermelon patch in the "annex" ("G" in Fig. 17) is located in the woods for safety from pilferers. Both the crop and its location are typical of the New Belt. The narrow strip of Portsmouth sandy loam across the center of the farm is considered inferior land by its tenant. He remarked to the writer that there was something wrong with it. He is baffled by its peaty, somewhat acid nature, though farther east where this soil is more common it is widely used for crops. It has too high a content of organic matter for tobacco production, however.

This farm differs sharply, as does the New Belt in general, from Old Belt tobacco farms in that it has several money crops besides tobacco. Like the Old Belt farms it has a considerable acreage in subsistence crops. Rhodes, the principal tenant, cultivates some 65 acres of land. He has about six acres of tobacco, eighteen acres of cotton, one acre of sweet potatoes, three and a half acres of Irish potatoes, three-quarters of an acre of cucumbers, an acre of watermelons, thirty-six acres of corn--much of which is inter-planted with soy beans, and a large, well kept garden. Tobacco, cotton, sweet and Irish potatoes, cucumbers, and watermelons are all money crops, though Rhodes uses as much of the truck as he needs for home consumption. The corn is for feed and for family consumption, and the soy beans provide a part of the feed. The white tenant has about the same crops in the same proportions in his fields south of the farm road. (His fields are marked with a small circle beneath the crop symbol in

Fig. 17.) He produces no commercial truck because his labor force is small.

The Rhodes family lives in the farmstead at the northwest corner of the farm. A small unpainted two-story barn occupies the angle between the public road and the farm road. This barn has three sheds for farm implements. Next it, to the east, is a small frame stable, also unpainted, with three stalls, and a loft for hay. Farther to the east, along the farm road are three frame tobacco barns, the nearest one to the farmstead having a shed for ordering and grading. South of the small two-story barn is the dwelling, a five room, one-story, frame cottage painted red. Within it live, without modern conveniences but in evident contentment, Rhodes and his wife, two grown sons, one grown daughter, one son-in-law, one daughter-in-law, one son about twelve, and three small grandchildren. The regular labor force is the four men, and in times of stress they are supplemented by the three women and the boy. Rhodes owns one horse and two mules. He keeps two brood sows and kills nine hogs annually, chiefly for home consumption. He has about sixty chickens and twenty-five turkeys and a goat for the children--but no cow. A new Ford sedan with a neat trailer provides transportation for freight and passengers, and there is a wagon for farm use. Rhodes provides the work stock, buys half the fertilizer, and keeps two-thirds of all farm produce.

Rhodes prepares his tobacco plant bed in January, burning it or not as he happens to prefer. Since the blue mold infection of recent years, he prepares about 200 square yards of plant bed. He locates the beds in newly-cleared land each year, selecting a moist south slope on the south side of woods. He plans to set his plants in the field in the last week of April and the first week of May, using 1,000 to 1,200 pounds of commercial fertilizer to the acre. He chops the field once, after "throwing out the middles," then in normal years cultivates one side of the row each week or after each heavy rain until the leaves meet across the rows,¹ laying-by with a broad sweep and leaving his plants set in a bed some six inches or so above the middles. He tops at twelve to fifteen leaves about the first of July and expects to begin priming about two weeks later. He usually primes five times, finishing about the end of August--by the time the cotton picking

¹The Old Belt farmer would consider this very careless farming.

begins. He cures six barns of tobacco from his six acres, and sells it in Goldsboro or Kinston, as he pleases, or occasionally in Wilson. In this, as in everything else, he consults with his overseer, but is not held very strictly to account in following instructions.

Rhodes sets his tobacco in the same field each year, holding that he thus conserves fertilizer. He buys his fertilizer and anything else he may need from his landlord's store, apparently under no particular compulsion, and on "fall credit." He collected a seed loan under the "benefit" section of the Farm Law, in 1938, but deposited the money in the bank and bought seed bed fertilizer on "fall credit" as usual.

Neither Rhodes nor his landlord was willing to give a financial statement as to tobacco production, partly because it is difficult to give a fair statement as to the returns of tobacco over a period of years. Rhodes produces about 1,000 pounds of tobacco to the acre and says that it is better than average for the community. The county farm agents in the New Belt attempt to keep accounts on tobacco costs and returns, and they agree that the crop pays poor wages for the labor expended on it.¹

The white tenant occupies the farmstead south of that in which the Rhodes family lives (Fig. 17). His two tobacco barns are east of his dwelling on a farm road. He works a smaller acreage than Rhodes, because he has only one child, a girl of about six, and his labor force and his living expenses are consequently small. He farms in about the same fashion as Rhodes, though on a smaller scale, and the economic status of the two families appears to be about the same.

A Border Belt farm.--In general the farms of the Border Belt are large and the land is level and sandy. The farms are set in large clearings on divides between the great swamps which characterize this part of the State. Many of them are plantations reminiscent of the ante-bellum plantation except that the owner is likely to live in the nearest town and there is, consequently, no great plantation house. Fairly typical of these plan-

¹The Farm Forecaster for November, 1938, gives the average gross return of Wayne County tobacco for 1937 as \$229.00 per acre. This average would give Rhodes perhaps \$800.00 for his labor and that of his team after paying his fertilizer bill and giving one-third of the money to his landlord. The per acre return of tobacco is high, but the labor return is low.

tations is one of 409.3 acres some three miles southwest of Lumberton.¹ This plantation is part of a tongue of slightly elevated land which runs from east to west between two wooded swamps (Fig. 18). The land appears quite level to the eye, but there is a very gentle slope to the north and to the south from the secondary public road which runs east and west across the center of the plantation. The land is fairly well drained with the aid of an extensive system of drainage ditches. All the soils of this plantation are Norfolk fine sandy loam.² The plantation proper is cleared except for a few acres along "runs" of the two swamps, but there is an adjoining body of woodland in the nearby swamp which is under the same ownership.

The owner lives in Lumberton, but drives out every day and spends his entire time in supervising the plantation. He rents the land to thirteen tenants on one or the other of two half-share arrangements. Tenants who supply their own work stock buy no fertilizer, whereas tenants without work stock buy half the fertilizer. In either case, the tenant furnishes his labor and takes half of the crop. Each tenant contracts, usually in December, to farm certain fields for one year. Tenant holdings are not permanent, but are shifted from one tenant to another as convenience dictates. As a rule a tenant's fields are in one body of land and this land is near the house he occupies. This is not invariable, however, and some tenants with a large labor force tend the fields in the immediate vicinity of their homes and other fields at considerable distances. The apportionment of fields to various crops and the cultivation of the crops is under the supervision of the landlord.

Ten of the thirteen active tenants are Croatan Indians,³ not an unusual situation in this part of the Border Belt. The

¹The Thompson farm was selected from several farms suggested by merchants and farm agents on the advice of the Robeson County farm agent. It appears to be representative, and there was available a fairly reliable map showing acreages of all crops. It is marked "3X" in Fig. 2.

²Soil Survey of Robeson County, North Carolina.

³The origin of the Croatan Indians found in this part of North Carolina is a moot point. The Indian himself holds that he is descended from the famous "Lost Colony" of Sir Walter Raleigh. Locally, it is thought that the ancestors of these Indians survived in the swamps of the area long after their relatives had been driven out.

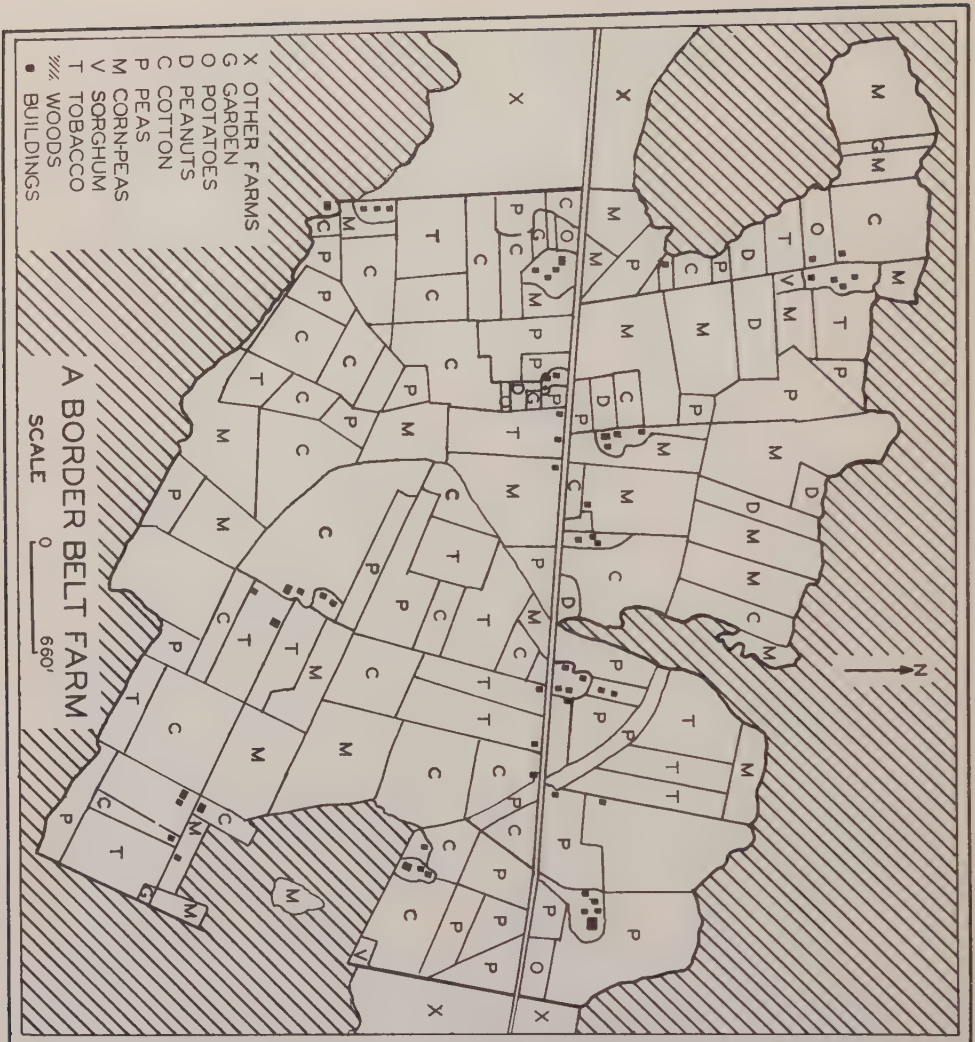


Fig. 18.--A Border Belt farm

remaining three are colored, and there is a fourteenth tenant, an old colored man who lives in one of the houses and cultivates a small garden as a sort of pensioner. These families have a total of 33 men and boys of working age and 27 women who do part-time work in the fields. There are 31 small children.

The tenant farmsteads are rather evenly distributed over the plantation (Fig. 18). Two of the farmsteads and the cottage of the old man referred to above are in the small strip of woodland which projects into the northern half of the plantation and hence are not shown on the map. The tenant homes are small, one-story cottages of three to five rooms. They are unpainted and set in bare yards, most of them without shade. There are no modern conveniences, and few of the homes have flowers. The farmsteads include, besides the dwelling, a stable for the mules, a storage barn, a smoke house, an ordering room and pack house for tobacco, perhaps a chicken house, and a shed or two for farm tools. Each tenant is assigned barn space sufficient for his crop in one of the 17 well distributed curing barns. The plantation has a total of 20 mules, 64 hogs, about 350 chickens, and 15 guineas. There are only 7 cows for the thirteen families.

Like most of those in the Border Belt, this plantation shows a strong subsistence phase in its economy. All the tenants cultivate large gardens, and several of them when questioned asserted that they bought only such items of food as coffee, sugar, and salt. The gardens produce something practically throughout the year, and quantities of garden produce are canned, preserved, or stored for winter use. Peas and corn are standard articles of diet for the people as well as the stock, and a considerable production of potatoes and sorghum is a part of the subsistence economy (Table 22). The hogs and chickens provide animal food, and the few cows on the farm are for milk production.

The subsistence factor in the field crops is supplemented by soil building. Peas are both a feed and food crop and a soil building crop. If the acreage in peas alone is added to the acreage on which peas are inter-tilled with corn, it will be seen that 235 acres of the plantation are in peas. The peas are never followed directly by tobacco. Corn or cotton precedes tobacco on these fields. Corn, aside from the peas, occupies by far the greatest acreage. The three money crops are tobacco, cotton, and peanuts. The peanuts are a new money crop for this area and are

being tried out on a small acreage. The cotton and tobacco acreage is that set by the Agricultural Adjustment Administration. The thirteen active families average about four acres of tobacco and seven acres of cotton each.

TABLE 22
CROP ACREAGES ON THE THOMPSON FARM

Crop	Acreage
Corn	182.20 ^a
Peas	59.40
Tobacco.	51.70
Cotton	93.70
Potatoes	4.50
Peanuts.	6.30
Gardens.	1.00 ^b
Sorghum.	.35
Total acreage in crops	399.15

^aAll but seven acres of corn are reported as having peas planted between the rows.

^bObviously, all gardens are not reported. Each farmstead has a sizable garden.

Although there is some variation in the tobacco cultivation practices of the various tenants, in general they follow the traditional practice of the area. These differ from those of the New Belt chiefly in that tobacco is topped somewhat higher, thus producing more leaves and lighter leaves than if it were topped low, and that plant beds are almost never burned on this plantation or in the general area. Plant beds are prepared and seeded anywhere from the middle of December to the middle of February. Fertilization is slightly heavier than in other belts, averaging 1,000 to 1,200 pounds to the acre. Transplanting is perhaps a week or ten days earlier than in the New Belt, and subsequent operations are proportionately earlier. The tobacco is ready before that of other producing areas in North Carolina, and the Border Belt markets open about two weeks earlier than those of other North Carolina belts. The tobacco is chopped once and the customary light cultivations are given at intervals of about a week. The tobacco is marketed in Lumberton and in one warehouse selected by the landlord.

No financial statement could be secured from tenants or

landlord, but the tobacco produces about 1,000 pounds to the acre and in 1938 the average gross return to the tenant from his half of the tobacco crop would have been in the neighborhood of \$400.00 to \$500.00 per family.¹ The tenants averaged perhaps \$100.00 each from their cotton.² It would appear that this income per family would suffice for a quite comfortable living, particularly in view of the home production of food. Certainly there is a sane use of land on this plantation, with a balance between money crops, food and feed crops, and soil conserving crops. Actually, the scale of living for the tenant families is very low. The large number of workers in the average family makes the money return per worker lower than would appear from a consideration of families as units. Other factors in tobacco production, in this section as in the tobacco belts in general, operate to reduce the benefits of an excellent use of land. The long-term credit extended to most tobacco farmers is at high interest rates. The fact that the tobacco farmer receives his income for the year in cash and during a short marketing period makes it more difficult for him to live within his means.

¹The Farm Forecaster for November, 1938 gives the average gross return of an acre of tobacco in this county for 1937 as \$233.00. With an average of four acres to the family, this would give about the figure above.

²This statement is based on statistics from the Farm Forecaster, November, 1938.

CHAPTER IV

BRIGHT TOBACCO IN MANUFACTURE AND FOREIGN TRADE

Almost half of the billion and a quarter dollars worth of tobacco manufactures in the United States in 1937 was produced in North Carolina. A hundred and seventy billion cigarettes made up 75 per cent, by value, of our national tobacco manufactures, and North Carolina is credited with 55 per cent of United States cigarette production. Virginia was second in cigarette production, with 29 per cent of the national total. Thus 84 per cent of the cigarettes of the United States were manufactured in the Virginia-North Carolina area. The remaining 16 per cent were manufactured in Kentucky, New York, New Jersey, Massachusetts, and California. The nation's cigarette manufacture was concentrated in 34 establishments, of which North Carolina had 10, Virginia had 5, New York had 9, and the four other states had 10. The enormous North Carolina cigarette production was in the three towns of Winston-Salem, Durham, and Reidsville, and that of Virginia in Richmond and Petersburg.¹

Chewing tobacco, smoking tobacco, and snuff accounted for only 10 per cent, by value of national tobacco manufactures in 1937. The Bureau of the Census withholds statistics as to value of production by states, beyond saying that Missouri is the greatest producer in this field, but it does give statistics as to labor employed. On this basis, Virginia, North Carolina, and Ohio press Missouri very closely for leadership. In the same year, chewing tobacco, smoking tobacco, and snuff were manufactured in 125 establishments, of which Missouri had 6, Virginia had 5, North Carolina had 4, and Ohio had 11. The remaining 99 establishments were distributed over 17 states.² Cigars accounted

¹The above statements are based on U. S. Bureau of Census, The Census of Manufactures: 1937 (Washington: Government Printing Office, 1939). These statistics cover only establishments with production valued at \$5,000.00 or more, and they classify the total production of an establishment as of its major manufacture.

²The Census of Manufactures: 1937.

for only about 13 per cent of the total value of United States tobacco production in 1937. Cigars were made in 693 establishments distributed over a number of states, but with practically no representation in Virginia or North Carolina. Pennsylvania, New Jersey, and Florida produced 70 per cent, by value, of our cigars.¹

The present situation in tobacco manufacturing is strikingly different, except as to cigars, from that of 1860. In that year, Virginia was, and had been for half a century, by all odds the foremost tobacco manufacturing state. Virginia produced, by value, approximately 55 per cent of the total United States tobacco manufactures, while North Carolina produced only about 5 per cent. Together, these two states produced some 60 per cent of the total. Ninety-eight per cent of the Virginia-North Carolina factories produced chewing tobacco, at that time the principal American tobacco product, whereas but 2 per cent of them produced pipe mixtures. There were 348 recorded tobacco factories in the two states and unquestionably a number of others, principally on farms, which were not recorded because their production fell below \$500 in value. Richmond had 52 factories, and produced 36 per cent of the total for Virginia and North Carolina. Lynchburg had 28 factories, Petersburg had 20; and Richmond, Lynchburg and Petersburg together manufactured 60 per cent of the total for the two states--or 36 per cent of the total for the United States.² There was a concentration of small tobacco factories in the Piedmont counties along the Virginia-North Carolina line--some 190 of them recorded in 17 counties. Most of these tobacco factories were small, only 14 of them having an annual production of more than \$150,000, and 257 of them having an annual production of less than \$50,000. Most of the larger factories were in the larger towns.³ Cigarettes had not yet been introduced into the United States in 1860. Cigars, then as now, were manufactured in widely distributed small factories. Thus, the emphasis in tobacco manufacture has shifted, in the years from 1860 to 1937, from Virginia to North Carolina. Yet, the Virginia-North Carolina section as a whole has maintained, and even increased its

¹Ibid. ²Robert, op. cit., pp. 161-64.

³Ibid., pp. 170 f. and 161-64. These figures do not include several factories in what is now West Virginia.

prominence in tobacco manufacture. The shift within the area was attendant upon a decline in the use of chewing tobacco and a rise first in the use of smoking tobacco, then of cigarettes, and finally an increased use of bright tobacco in both. It was due also to initiative and enterprise on the part of a few men--men, particularly, of Durham, Winston-Salem, and Reidsville.

The rise of Bull Durham.--The hamlet of Durham's Station was the stage upon which the spectacular rise of bright tobacco manufacture began, and the time was the final, tragic year of the Civil War. In the spring of 1865, General Johnston, closely pressed by Sherman, retired westward along the railroad recently completed along the southern border of the North Carolina Piedmont counties which had recently taken up the cultivation of bright tobacco.¹ Both armies passed through Durham's Station, where Robert F. Morris had established one of the small tobacco factories common to the section and had for some seven years manufactured with considerable success a pipe mixture of the new bright tobacco. The two armies swept the village and countryside clear of tobacco, particularly since Sherman halted an army corps at Durham's Station while negotiating the surrender of the Confederates. This catastrophe proved to have a silver lining, for thousands of soldiers were soon released to go to widely scattered homes, and they began promptly to write to Durham's Station for the bright tobacco which they had tried and found to their liking. This volunteer sales force seems to have popularized "Durham Type" tobacco throughout the country, and the Morris Company, under several names and with several different owners, managed to keep the lead as the manufacturer of the new brand. It took a Durham bull as its trademark, inaugurated a vigorous sales campaign, and fought a series of legal battles which resulted eventually in restricting the designation "Durham Type" to products actually manufactured in Durham and in establishing the Durham bull as its inviolable trademark. By 1880, "Bull Durham" was a powerful corporation with trade connections to practically all parts of the civilized world. It justly boasted that it had, "Made Durham Renowned, the World Around."² One year later the cigarette came to

¹Supra, p. 12.

²William Kenneth Boyd, The Story of Durham (Durham: The Duke University Press, 1927), pp. 21, 27, 51-76.

Durham, and from that year on, "Bull Durham," having established bright tobacco on the domestic and foreign markets, declined in relative importance as compared with a younger rival and came, eventually, to be absorbed into the younger company.¹

The Dukes.--The great influence of the Duke family on the development of bright tobacco manufacture illustrates the power of individual initiative in the localization of industry. The Duke company rose in most spectacular fashion from very inauspicious beginnings. A middle-aged Confederate veteran returned to his home near Durham's Station in the spring of 1865, to find his farm devastated by the passing of two armies. He was almost penniless, but he contrived to set a crop and then, assisted by two young sons, he beat, sifted, and packed into home-made cloth bags a few hundred pounds of bright tobacco leaf which had been overlooked by the soldiers. He labeled his product "Pro Bono Publico" and set out with a wagon-load of it on one of the peddling tours traditional in the border counties. The man was Washington Duke, and his sons were Benjamin and J. Buchanan. The tobacco sold well in the eastern counties to which he took it, and Mr. Duke was encouraged to expand his farm factory. Seven years later, he manufactured 125,000 pounds of "Pro Bono Publico," and in 1874 he and his two younger sons moved to the railway at Durham's, where there were already eleven tobacco factories competing with the Durham Bull and where there was a thriving auction market, established three years before. The Dukes took in Baltimore capital in 1880, re-organized as "W. Duke Sons and Company," and the following year shifted to a new field of manufacture in which J. Buchanan Duke saw an opportunity to escape from the overwhelming prestige of the "Bull Durham" product.²

The cigarette.--The new field was cigarette manufacture, introduced to this country about 1867. Both the Duke Company and the "Bull Durham" Company began to make cigarettes by hand in 1881, using bright tobacco. Three years later, the Dukes secured an agreement from a Virginia inventor, Bonsack, to lease them a

¹Local tradition says that the "Bull Durham" trade mark was inspired by the Durham bull still shown on Coleman's mustard, a product manufactured in Durham, England. It says, further, that the crowning achievement of the "Bull Durham" advertising campaign was the painting of the Bull on the Rock of Gibraltar and on the largest pyramid.

²Boyd, op. cit., pp. 77-87 and 69-70.

cigarette machine which he had invented, at a royalty below that charged any other company. With some improvements, the Bonsack machine proved practicable, cutting the cost of manufacturing cigarettes from eighty cents to thirty cents per thousand.

The invention by J. Buchanan Duke of a convenient card-board box to replace the cumbersome roll in which cigarettes hitherto had been packed was another step in the success of the Duke Company in North Carolina. The Internal Revenue Tax on cigarettes had just been cut from the war level of \$1.75 per thousand to fifty cents. Taking advantage of lower costs, the Dukes cut the price of ten cigarettes from ten cents to five cents, inaugurated an intensive advertising campaign, and soon reached a commanding position in the domestic cigarette trade. Already they had sent a representative on a nineteen month's tour of the world to introduce Duke cigarettes into western Europe, Russia, South Africa, India and Ceylon, Singapore, Java, Australia, and New Zealand. They soon had a considerable export trade. A second giant had developed in Durham. Cigarettes joined pipe tobacco as an outlet for bright tobacco.¹

The domestic "trust."--The introduction of cigarette manufacture and the active competition which it created led eventually to the formation of a tobacco trust. There were cigarette machines other than the Bonsack, and the Bonsack was available at higher royalties to other companies. A number of other tobacco manufacturers introduced machine manufacture and competed with the Duke company in a bitter "cigarette war" of several year's duration. It ended, in 1890, when the Dukes persuaded four of their strongest competitors in the cigarette field to join them in forming the American Tobacco Company,² capitalized at \$25,000,000, and controlling 97 per cent of the domestic cigarette production.³ Cigarettes were a small item in the tobacco

¹Boyd, op. cit., pp. 87-93.

²J. W. Jenkins, James B. Duke, Master Builder (New York, 1927), pp. 73-89 gives the combining companies as: Allen and Ginter, Richmond; W. S. Kimball and Company, Rochester, New York and Oxford, North Carolina; Kinnet Tobacco Company, New York and Virginia; Goodwin Tobacco Company, New York; and W. Duke Sons and Company, Durham and New York. The Dukes had established a New York branch in 1884.

³"Bull Durham" was absorbed in 1898 and was assigned to

consumption of 1890, their total value only approximately \$9,000,000. Control of cigarettes was not enough for the restless energy of the new company. It manufactured, beside cigarettes, about 8 per cent of the smoking tobacco and 3 per cent of the plug tobacco for the country. It set to work to acquire control in these items, and eventually in all items, of the tobacco trade. It was amazingly successful, though it never managed to control the hand-made cigar. By 1907 the American Tobacco Company had absorbed companies or acquired control of them until it controlled approximately 82 per cent of the cigarette production of the country, 80 per cent of the plug production, 72 per cent of the smoking tobacco production, 81 per cent of the "fine cut" production, 96 per cent of the snuff production, 91 per cent of the little cigar production, and 14 per cent of the cigar production.¹ Further, it had almost absolute control of domestic licorice production, had strong interests in the manufacture of tin foil and boxes, and through a subsidiary was making a strong bid for control of retail distribution.²

Foreign combinations.--Some of the companies absorbed by the American Tobacco Company had business in Great Britain, and the business was pushed with characteristic Duke vigor after the combination was affected. British manufacturers secured an increase of import duty on manufactured cigarettes and the Dukes replied by purchasing a large British factory and beginning the manufacture of American type cigarettes in England. Alarmed, a number of British tobacco companies combined to form the Imperial Tobacco Company, Limited,³ a commercial giant large enough to command the respect of the American "trust." A battle royal ensued, ending, in 1902, in an agreement that the Imperial Tobacco Com-

the American Tobacco Company upon dissolution of the "trust." It is still a popular brand, and a large new factory is now being constructed for its manufacture (1939).

¹Reavis Cox, Competition in the American Tobacco Industry (Columbia University Press, 1933), taken from Report of the Commissioner of Corporations on the Tobacco Industry, Part III, 1915.

²Chas. D. Barney Company, The Tobacco Industry (New York, 1924), p. 31.

³Ibid., pp. 32 f.

pany would confine its activities to Great Britain, the American Tobacco Company would restrict itself to the United States, and a new, jointly-owned corporation, the British-American Tobacco Company, would ". . . have the heathen for its inheritance, and the uttermost parts of the earth for its possession." Two-thirds of the stock of the new corporation were assigned to the American Tobacco Company, and a third to the Imperial.¹

Dissolution, and "Succession Companies".--Suit was brought against the American Tobacco Company in July, 1907, for violation of the Anti-Trust Act of 1890, and the Supreme Court, in 1911, directed the partition of the "trust" into, eventually, sixteen corporations. An attempt was made to set up at least two powerful competitors in each branch of tobacco manufacturing. Three of the "succession companies" were assigned the numerous cigarette brands of the "trust," and the same companies were assigned most of the smoking tobacco business. These three companies--the American Tobacco Company, the Liggett and Myers Tobacco Company, and the P. Lorillard Tobacco Company, with a fourth, the R. J. Reynolds Tobacco Company, are of primary interest to the student of bright tobacco. The three companies first named were assigned approximately 80 per cent of the cigarette business of the country and approximately 76 per cent of the smoking tobacco business--the two products offering the chief domestic market for bright tobacco. The fourth, the R. J. Reynolds Tobacco Company, was set up as a plug tobacco manufacturer, with less than 3 per cent of the national smoking tobacco business added. It was soon, however, to change its status. A number of "independents," companies never controlled by the American Tobacco Company, accounted for 20 per cent of the cigarette and smoking tobacco production.²

The blended cigarette.--The traditional policy of tobacco manufacturers at this time was to bring out a number of brands of cigarettes and smoking tobacco, pushing first one and then another in advertising, and changing brands frequently. Many different combinations of various tobaccos were used, and many variations in flavoring formulae. Bright tobacco was used altogether in some

¹Judge Junius Parker and H. M. Roberson in hearings before a subcommittee of the House Ways and Means Committee, 1934.

²Chas. D. Barney Company, op. cit., p. 35.

cigarettes and in some smoking mixtures, but the popular pre-World War cigarette had a high percentage of Turkish tobacco, and most smoking mixtures contained several types of tobacco.

The R. J. Reynolds Tobacco Company entered the cigarette field in 1913, and at once made a striking innovation in cigarette selling technique. In 1897-1898 the Duke interests had acquired control of this Winston-Salem plug tobacco company, together with a number of others, but the company had never lost its identity or its local management.¹ It had, since 1907, pursued the policy of featuring in its advertising one selected brand, thus building up a cumulative clientele for that brand. It had attained considerable success with a smoking tobacco thus managed,² "Prince Albert," and when it decided to bring out a "blended"³ cigarette, it applied a tremendous advertising campaign to this one cigarette, the famous "Camel." The blend and the new advertising policy scored immediate success, partly, perhaps, because the World War soon disturbed the Turkish tobacco producing areas and transportation of Turkish leaf to this country. The Liggett and Myers Company followed suit, selecting "Chesterfield" as its featured blended cigarette, and the American Tobacco Company followed with the blended "Lucky Strike." P. Lorillard brought out the blended "Old Gold" as its featured product, but has not succeeded in establishing it on the popularity level of the first three.⁴ All four of these cigarettes use a high proportion of bright tobacco, though the exact percentage is secret.

Concentration of cigarette manufacture.--It is noteworthy that nearly all of the enormous production of Chesterfields, Camels, and Lucky Strikes--the most successful cigarettes--is in the relatively small Piedmont area bounded by Richmond at the northeast and Durham and Winston-Salem at the southwest. All Camels are manufactured in Winston-Salem; Chesterfields are manu-

¹Jenkins, op. cit., pp. 104-109.

²Winston-Salem, Journal-Sentinel, April 24, 1938.

³Virtually all cigarettes are blended from various tobaccos. In the trade, a "blended" cigarette is one with a high proportion of bright tobacco, with burley, Turkish, and Maryland added.

⁴Fortune, December, 1936, estimates sales of the "Big Four" as follows: Camel, 45 billion; Chesterfield, 38 billion; Lucky Strike, 38 billion, and Old Gold, six billion.

factured mainly in Durham and Richmond; and Lucky Strikes are manufactured in Reidsville ("13" in Fig. 17), Durham, and Richmond. These cigarettes are by no means the only ones manufactured in this area, nor is tobacco manufacture in the area confined to cigarettes,¹ but they make up by far the greater part of the enormous total value of tobacco manufacture in the region.²

The Piedmont area is the logical one for the development of bright tobacco manufacture. It spans the Virginia-North Carolina Old Belt counties within which for the past 70 years thousands of men have had an intimate acquaintance with bright tobacco leaf and other thousands have had experience in its manufacture.³ It has easy access to the producing areas, and it lies in the axis of major traffic flow from the producing areas to the great markets of the Northeast and the Middle West. It is the one area which could produce the leaf and the men who knew the leaf and its manufacture, and it is an area advantageously located as to the market and transportation to it of so valuable a product, per unit of bulk or weight, as tobacco. The Piedmont is well adapted to manufacture in general, as indicated by the well-known recent influx of industry to this section. The three great tobacco companies whose manufacturing is concentrated in this region have shown no intention of shifting their plants. In fact, all three have in recent years enlarged their North Carolina establishments.

Increase in cigarette consumption.--North Carolina and Virginia rose quickly to a dominant position in the cigarette industry,⁴ and such dominance represents today an enormous value of product, for cigarette consumption has increased very rapidly,

¹For example, nine cigarettes are made in Durham, and two smoking tobacco mixtures (Letter from the Secretary of the Durham Chamber of Commerce). R. J. Reynolds manufactures in Winston-Salem not only Camels, but four smoking mixtures and eight brands of chewing tobacco (Winston-Salem Journal-Sentinel, April 24, 1938).

²Fortune, December, 1936, estimated that Lucky Strikes made up 75 per cent of the total sales of the American Tobacco Company's 500 manufactured items, and accounted for 65 per cent of the Company's profit.

³The reader will recall the many tobacco factories of this area.

⁴An Internal Revenue Bureau press release in the News and Observer, February 3, 1938, credits North Carolina with over half the domestic production of cigarettes and North Carolina and Virginia together with approximately four-fifths of the national total.

particularly in the period since the beginning of the World War. There was very serious opposition to cigarettes before the World War--as, indeed, there is to the present. However, when the men of the world went to war, with its loneliness, its long periods of boredom, and its severe strain on the nerves, they turned to tobacco for solace. The cigarette offered the best smoke for the soldier. It was cheap and easily carried, as compared with the cigar, and it did not require so much paraphernalia as a pipe. Further, it offered a quick smoke to men whose smoking might be interrupted without notice. Cigarette smoking spread rapidly among the armies. Particularly did the American blended cigarette spread, for Turkish tobacco was increasingly hard to get.

TABLE 23
DOMESTIC CONSUMPTION OF SMALL
CIGARETTES FOR STATED YEARS*
(Millions)

Year	Number	Per Capita
1900	2,635	35
1905	3,368	41
1910	7,863	85
1915	16,740	169
1920	50,409	476
1925	75,011	647
1930	119,941	975
1936	148,000	1,138

*Figures for 1900 to 1930 were supplied to the sub-committee on tobacco of the House Ways and Means Committee, 1934. Figures for 1936 from Fortune, December, 1936. Population estimated, for 1936, at 130,000,000.

War songs and war stories popularized the cigarette at home, and people who had objected to "coffin nails" as injurious to health and morals now vied with each other in sending cartons of them to the men at the front. The returned soldiers were cigarette smokers in the main, and as returned heroes they set the cigarette on a far higher plane in public estimation. Extraordinarily vigorous and expensive advertising campaigns exploited the new attitude to the utmost. Older men and younger men took up the smoking habit of the soldier. Women were open smokers by

1927.¹ The increase in cigarette production in this generation has been phenomenal (Table 23).

The "Ten-Centers".--It will be recalled that "Independent" tobacco companies produced about 20 per cent of the nation's cigarettes at the time the tobacco "trust" was dissolved. Their percentage of the market declined under the aggressive campaigns of the "Big Four" until Camels, Chesterfields, Lucky Strikes, and Old Golds accounted for 90 per cent of domestic sales for 1930. In June, 1931, all four of these cigarettes advanced their whole-sale price from \$6.40 to \$6.85 per thousand. Tobacco leaf was cheap, and the "Depression" had begun. The "Independents" sensed an opportunity to recover a part of their lost market. They began to produce cigarettes priced to retail at ten cents per package of twenty, as against fifteen cents or more for the "Big Four." By September, 1932, the "Independents" were selling about 20 per cent of the nation's cigarettes.² The "Big Four," alarmed at this increase and at an increasing tendency of cigarette smokers to "roll their own," cut their wholesale prices simultaneously from \$6.85 per thousand to \$6.00 and eventually to \$5.50 per thousand. The "Independents" appealed to Congress for a cigarette tax based on sale price, rather than weight, but failed after hearings in 1934, and the "Big Four" had retrieved their 90 per cent of domestic market by the end of 1936.³ The triumph of the "Big Four" was the triumph of North Carolina, for none of the "Ten-Centers" were manufactured in the State. Further, it was persistently affirmed, and as persistently denied, that the "Ten-Centers" used smaller percentages of bright tobacco than did their competitors, and that they paid very low prices for the bright tobacco which they did purchase.

Minor tobacco manufactures.--The great cigarette companies operating in North Carolina and Virginia have not neglected the plug and smoking tobacco market. Each of the three manufactures smoking tobacco and plug in North Carolina, and the Brown and Williamson Tobacco Company, of Winston-Salem, manufactures plug and smoking tobacco. North Carolina factories produced 35.7 per cent of these manufactures in 1934, a total production of more

¹See Fortune, December, 1936, "The American Tobacco Company," for a discussion of the tobacco advertising campaigns.

²Fortune, November, 1932.

³Ibid., December, 1936.

than 123,000,000 pounds.¹

Giant industries.--The four great manufacturing plants in North Carolina valued their total production for 1933 at almost \$379,000,000, surpassing textiles, the next industry in value of product, by \$65,000,000, and accounting for 42 per cent, by value, of all manufactures in the State.² The value of cigarettes alone totalled over half a billion dollars in 1937, and accounted for almost 40 per cent of the total value of state manufactures.³ The manufacture of smoking tobacco and cigarettes is highly mechanized, however, and despite the high value of its products tobacco manufacturing employed only a ninth as many people as did the textile industry, and only five-eighths as many as combined forest products industries whose product is valued at only an eighth that of the tobacco factories.⁴

The profits of the great cigarette companies appear to be highly satisfactory, though the traditional secrecy of the tobacco industry makes it difficult to give exact statements. An apparently reliable survey estimates the average return on capitalization for the "Big Three" in the cigarette world at about 18 per cent during the years 1931-1935, inclusive--lean years for business in general, and including the years during which the "Ten-Centers" made their most determined campaigns.⁵

The great tobacco companies depend for their business upon inculcating a taste for tobacco--a taste apparently not native to many people, and on fostering this taste until it becomes habitual. Not only must a taste for tobacco be made habitual, but a taste for the cigarette, and for one particular brand of cigarette. Moreover, the cigarette clientele must be recruited constantly to replace customers lost in various ways. Fashion in

¹Winston-Salem Chamber of Commerce, The Tobacco Industry in North Carolina (Winston-Salem: Winston-Salem Chamber of Commerce, 1937).

²North Carolina Department of Conservation and Development, North Carolina: Today and Tomorrow (Raleigh, 1936), pp. 222-24.

³Census Bureau press release, News and Observer, April 3, 1939.

⁴North Carolina Department of Conservation and Development, op. cit., p. 222.

⁵Fortune, December, 1936, "The American Tobacco Company."

tobacco use has changed in the past--as witness the rise and decline of snuff, chewing tobacco, and the cigar. There appears to be no reason to think that the present vogue of the cigarette or of any one cigarette is self-perpetuating. Hence, the unquestionable present-day appeal of the blended cigarette is buttressed by a ceaseless advertising campaign which in scope, brilliance, resourcefulness, and sheer magnitude excites the admiration of commentators even in this period of lavish advertising.¹

Taxation.--The great profits of the cigarette companies have been made under a burden of taxation equalled in few American industries. In addition to the usual taxes on manufacturing enterprises, there is a Federal tax of \$3.00 per thousand small cigarettes,² or six cents on the usual package of twenty which retails at around fifteen cents.³ The small Virginia-North Carolina manufacturing area paid 88 per cent of the Federal tobacco tax, in 1937, North Carolina paying \$279,103,000 and Virginia \$150,855,000.⁴ The various states have at times levied taxes up to five cents per package of cigarettes, in addition to the Federal tax.⁵ This tax has been protested,⁶ but to little avail, since the producing area has a relatively small representation in the Congress and the consumers are distributed over the entire nation.

¹Ibid. The cigarette companies compete with each other in these campaigns, but their joint effort is directed toward selling the blended cigarette--and therefore toward selling bright tobacco.

²The Federal tax was set at \$1.25 per thousand in 1910, increased to \$2.05 per thousand in 1917, as a war measure, and increased to the present figure in 1919 to help replace revenue lost as a result of the ratification of the Prohibition Amendment. Small cigarettes are those weighing three pounds or less per thousand. There is a negligible production of larger cigarettes, of which no account is taken here (Greensboro News, April 13, 1934).

³Representative John H. Kerr estimated that the farmer, in 1933, received 1.25 cents for the tobacco in a package of cigarettes, and voiced an opinion that this tax should be reduced, with provisions to ensure that the farmer receive the benefit of the reduction (See U. S. Congress, House, op. cit.).

⁴Greensboro News, February 3, 1938, editorial.

⁵Ibid.

⁶See U. S. Congress, House, op. cit., passim.

The Manufacturing Town

The manufacturing process.--Tobacco manufacture belongs to the "light" industries, but it has storage requirements which add to the typical pattern of such industries. Tobacco leaf must be re-dried soon after purchase and must then be aged for a period varying from six months to three years. The re-drying may be done in the market town. Some leaf is brought into the factory towns for re-drying, however, and all of the factory towns have large markets in which local factories buy a part of their leaf requirement. The unprocessed leaf is brought to the establishment by truck, hung on sticks, placed stick by stick on an endless belt, and passed through an oven-like room in which it is exposed to blasts of hot, dry air. Moisture is completely removed, then the amount considered proper is returned to it in a humidifying chamber. The properly conditioned tobacco is then packed into hogsheads and taken to a storage house for aging. The tobacco will pass through several "sweats" during its aging, and it must be well ventilated throughout the process. The hogsheads are stored in one-story sheds whose side walls are partly open or so constructed that they can be partly opened. These storage houses are as a rule placed in long rows in a storage field just outside the corporate limits of the town (Fig. 20), for taxes on the property and the stored tobacco are a serious consideration. The houses are spaced some fifty yards apart for fire protection, and many of them are divided into halves by concrete fire walls. A private water-system penetrates to every part of the storage yard. The value of the stored tobacco will run to a number of millions of dollars, but its value to the manufacturer is perhaps greater than its sales value. It is his stock for two or three years to come. If he were to lose it all by fire, it would be difficult, if not impossible, for him to continue to produce his brands of tobacco. The storage yard may or may not be on a railway, for transportation of the leaf by truck is quite easy and fast.¹

The tobacco is removed from storage after different aging periods and taken to the factory. Here it may go into temporary

¹The hogshead, containing perhaps 1,000 pounds of tobacco, is a very convenient package. Large quantities of tobacco are handled thus as units, and the hogshead can be rolled.

storage, and here tobacco for cigarettes is separated from that destined for pipe tobacco. The latter is taken out and manufactured at the receiving end of the plant. The cigarette tobacco passes on to a room in which hogsheds are broken and the leaves are straightened out and smoothed. These leaves then pass through a conditioning machine which puts them into a proper state of humidity and on to the stemming room. Here machines strip out the stems. The "strips" pass to the cutting room, where machines cut the leaf into the small shreds familiar to the cigarette smoker. These shreds pass to a machine which makes some 1,200 cigarettes per minute, packs them into packages, seals them with Cellophane, and stamps them. They are packed by hand into cartons of twenty packages each, the cartons are packed into larger cartons, and the cigarettes pass on an endless belt to the shipping room. Throughout the progress of the leaf to the cigarette machine it is mixed with other types of leaf, with leaves at different stages of aging, and with various flavorings. The blend and the flavoring are carefully guarded secrets.

The cigarette manufacturing process is of the standard American "moving belt" type. Motion is forward from the time the leaf enters the factory until it reaches the loading shed. The buildings, therefore, are long and set end to end. The machines used are relatively light, and the operations go forward on several floors. The factories are all on railway lines and served by sidings and spurs, and the loading room is on the railway, for most of the finished product is shipped by rail. The factory may be thought of as a long building of from one to three stories, crossing streets if necessary by overhead pass-ways or underground tunnels, with its receiving end on the outskirts of the congested area of the town and its shipping end on the railway (Fig. 19).

The factory a city nucleus.--The pattern of the tobacco town is quite different from that of the cotton mill town, for the cotton mill tends to occupy a village on the outskirts of the town and distinct from it, whereas the tobacco factory in each of the North Carolina tobacco towns is almost in the heart of the city (Fig. 19). The explanation appears to be that in each case the city grew up around the tobacco factory. The commercial center is located with reference to the tobacco factory; labor is housed with reference to the tobacco factory, colored laborers tending to live on one side and white on the other; schools and



Fig. 19.--Air view of the commercial center of Durham, showing warehouses at right center.



Fig. 20.--Storage houses of the Liggett and Myers Tobacco Company, north of Durham.

churches are located with reference to dwelling areas, and therefore often surprisingly close to the tobacco factory.

Negro population.--Tobacco factories employ both white and colored workers, while cotton mills employ mainly whites. The tobacco towns, as a result, have comparatively large colored populations, segregated in more or less distinct colored residence areas.

Size of towns.--Tobacco factories in themselves do not build great cities, for their processes are highly mechanized and their labor requirement relatively small. All the tobacco towns have cotton mills and other factories, as well as tobacco factories, and the combined payrolls of the several industries support a considerable retail section and personal services of various kinds. Durham has about 65,000 people, Winston-Salem about 75,000, and Reidsville about 10,000.

Social tone of the tobacco cities.--The tobacco cities are working towns. Only the R. J. Reynolds Tobacco Company has kept its main office in North Carolina. The result is that, except in Winston-Salem, men who have attained to great wealth in developing the tobacco companies and men who rise to large salaries in their service, are to be found in other cities, particularly in New York. The tobacco organizations have a tradition of long hours and hard work for their rising officers, and there is little evidence of wealth or leisure. Winston-Salem, however, has a number of country estates at several miles distance from the city. The cities themselves have considerable areas of good homes and a few fine homes, but very few show-places. They have, on the other side of the ledger, large areas of poor housing, principally in the colored sections of the towns.

The "Independents"

There are a number of so-called tobacco "factories" in North Carolina owned by "independent" companies. The "Independents" are mainly trading corporations, buying on the auction market for re-sale or on order from clients, but they perform certain manufacturing processes which should be discussed here.

Many of the stemming and re-drying plants distributed over the tobacco belts (Fig. 13) are owned and operated by the "Independents." The plants tend to be on the railway, close to the warehouse section. They have comparatively small storage

houses; for their function is not to age tobacco, but to process it and ship it as soon as possible. They begin operation as soon as the local markets open, continue active until the market closes and for a week or a month later, then keep a skeleton force on hand to care for any tobacco which may be left, answer inquiries, and submit samples to buyers. These factories perform a real service in processing tobacco for clients whose needs are too small to allow maintenance of their own processing facilities.

The General Foreign Trade in Tobacco, 1860-1923

Geographic bases of world tobacco trade.--World trade in tobacco is based chiefly on differences in local tobacco production, and, to a degree, on local differences in tobacco taste. Tobacco is produced by most of the nations of the earth, and it is consumed by practically all of them. Tobacco responds so readily to variations in soil, climate, and methods of cultivation as to produce an almost infinite number of varieties and sub-varieties of leaf. All varieties are used by someone, but certain varieties have caught the fancy of the world and are in general demand. No nation, not even the United States with its great variety of climates and soils, can produce all of the popular types. Every consuming nation, therefore, is in the world market for some types of tobacco. Many nations, further, export a surplus in some types of tobacco.

There appears to be no correlation between tobacco tastes and local climate, soil, or topography. There are well-known national preferences in tobacco, but they appear to be based on custom or fashion or cost, not on physical characteristics of the region. Thus, the English and the Chinese notoriously prefer bright tobacco, while England's neighbors, the Germans, have until recently as notoriously preferred the darker types. The Italian uses dark tobaccos, while the Greek prefers light tobacco. Moreover, regional preference in tobacco is subject to change. A shift in tobacco fashions from pipe smoking to snuffing, from chewing to cigar smoking, or from the pipe and cigar to the cigarette, leads to demand for different types of tobacco. Thus, the French now use more bright tobacco than formerly because the cigarette has come into greater prominence in France.¹

¹Tobacco Markets and Conditions Abroad, passim.

The ease with which tobacco can be transported makes it possible for regions to exchange their surplus tobaccos without difficulty or undue cost. It seems quite likely that a few favored types of tobacco would capture the world market if the tobacco trade were untrammelled, for many producing areas persist only under government protection.¹

Taxation and governmental restrictions.--The tobacco trade is by no means free to follow an untrammelled course in meeting the taste requirements of the world. Each producing nation wishes to foster its own production, whether in its borders or in its dependencies. Besides, nations have long recognized the enormous revenue-producing potentialities of tobacco. Almost every nation meets the double problem of fostering domestic production and producing revenue in one of two ways, both hallowed by long tradition. One is the "regie" system, originated in France prior to the French Revolution and perfected by Napoleon. In this system, the government conducts a monopoly in all tobacco products. It issues licenses to farmers for production of stated poundages of local tobacco types; and it buys abroad any additional tobacco needed, most of the purchases abroad being, of course, of tobacco which cannot be produced in the country or its possessions. The "regie" manufactures tobacco or licenses individuals to do so, and it controls the sale of tobacco products. Naturally, the "regie" is able to affect powerfully the consumption of tobacco within its national borders, and it uses its great power to promote the home tobacco industry in so far as it seems compatible with broad national interests. France, Italy, Poland, Japan, and Sweden are among the nations which use the "regie" system.

The other system was developed by Great Britain and is used by the United Kingdom, Belgium, the Netherlands, and other countries today, and was used by Germany until recently. The nation using this system does not conduct a government monopoly in tobacco, but it taxes imports of tobacco very heavily and allows a rebate of duty or a reduced duty on imports from its own possessions, if any.² Both systems have been modified recently by cer-

¹Ibid.

²See Robert, op. cit., pp. 10-11, 122, 125, 127, 194 for the origins and developments of these two systems and Tobacco Markets and Conditions Abroad, passim, for the present situation.

tain nations. These recent developments will be discussed later.

The United States in the world tobacco trade, 1860-1923.--

The United States has long been primarily a seller of non-cigar types of tobacco.¹ The vast area and thin population of the United States allows production of a vast surplus of tobacco beyond domestic needs, and the wide variations in our climate and soil permit the growth of many types of leaf. An active, intelligent, and commercially-minded population has exploited these advantages for three centuries, with the assistance of powerful European importers throughout the Colonial period and to the present. Western Europe is the great buyer on the world tobacco market.² Crowded populations and acreage restrictions due to a desire for self-sufficiency in essential foods have given rise to a demand for tobacco far in excess of local production, and small areas with essentially uniform climate limit variety in tobacco production in west European countries. China has long been a great producer of tobacco, as has India,³ but the tremendous local demand for tobacco and the demand for food for the crowded population has held the production of both countries to little more than a national sufficiency. China was for a time a great buyer of United States tobacco and seemed about to capitalize on her production possibilities and become a great seller, as well, when recent disorders interrupted her trade and made her future as a tobacco power an enigma.

The tables below show the tremendous and growing volume of United States tobacco exports (Table 24) and indicate the trend in United States markets during the period under discussion (Table 25). It will be noted that the tobacco leaf exports of the United

¹U. S. Department of Agriculture, Agricultural Statistics, 1938 (Washington: Government Printing Office, 1939), states the average United States tobacco leaf import for the years 1930-1931 to 1934-1935 as 63,588,000 pounds.

²Ibid. Great Britain is the greatest importer, but all west-European countries import large quantities of leaf.

³Ibid. Both China and India ("India" including British India and "certain native states") are credited with production somewhat greater than that of the United States: India, 1,369,670,000 pounds, and China, 1,357,813,000 pounds, as compared with 1,336,559,000 pounds for the United States as the annual average for the years, 1930-1931 to 1934-1935. Other countries producing over 100,000,000 pounds are the U.S.S.R., Brazil, Japan, Italy, and Greece.

TABLE 24

AVERAGE EXPORTS OF LEAF TOBACCO FROM THE
UNITED STATES FOR STATED PERIODS*
(In millions of pounds)

Year	Export	Year	Export
1862-1866	140	1897-1901	304
1867-1871	195	1902-1906	326
1872-1876	242	1907-1911	334
1877-1881	266	1912-1916	408
1882-1886	238	1917-1921	497
1887-1891	259	1921-1926	497
1892-1896	282		

*From Statistical Abstract of the United States, 1932, p. 663. All figures are given to the nearest million.

TABLE 25

CHIEF PURCHASERS OF UNITED STATES LEAF TOBACCO FOR STATED PERIODS^a
(In millions of pounds)

Years	1870	1880	1894-'98 ^b	1900	1910	1920
Country: ^c						
United Kingdom	32	34	82	122	131	163
Germany	43	59	54	53	39	15
France	23	27	31	39	34	60
Italy	28	23	26	38	43	44
Netherlands	15	19	19	20	20	26
Spain	11	12	21	14	14	2
Belgium	1	18	21	17	12	28
Norway and Sweden	..	..	1	2	2	16
Denmark	..	..	..	..	..	7
Canada	7	7	11	9	13	17
Australia	..	1	2	4	11	18
China	..	..	..	..	5	18
Japan	..	..	1	1	3	7

^aStatistics for 1870 and 1880 are after Statistics of Manufactures of Tobacco (Census Office, 1884); for 1894-1898, from Twelfth Census, Vol. VI, Part II; for 1900, from Twelfth Census, Vol. IX, Part III; for 1910 and 1920, from Trade Promotion Series, Number 7, United States Department of Commerce, 1925. All figures are given to the nearest million.

^bAverage for these years.

^c"United Kingdom" is made to include Ireland, throughout, and Norway and Sweden are taken together for convenience.

States were multiplied by approximately 450 per cent during the sixty years between 1866 and 1926. During this period the United Kingdom came from second place to a dominant position in our leaf export, while Germany declined relatively as a customer throughout the period, dropping to a minor place after the outbreak of the World War. Another noteworthy change is the development of large markets in Australia, China, and Japan. Even with the rise of this Pacific trade, western Europe was by all odds the chief market for United States leaf tobacco from 1860 to 1923.

Bright tobacco leaf in foreign trade, 1860-1923.--Bright tobacco appears to have gained slowly but surely in the export trade of the latter half of the nineteenth century. The United States Government did not begin to keep statistics for the several types of tobacco in foreign trade until 1923. It is possible, however, to get some idea of the part played in foreign trade by bright tobacco from a study of the general tobacco trade of the United States and the occasional remarks appended to statistics by tobacco experts in governmental employ. Thus, J. R. Dodge comments, in 1884: "It (bright tobacco) is growing in appreciation, not only in this country but in Great Britain, where rapidly increasing demand for it promises large extension in the future."¹ Since Great Britain was taking only about 34,000,000 pounds of United States tobacco of a total export of almost 216,000,000 pounds, it seems that our export business in 1884 was overwhelmingly of dark types. Ten years later the English, German, and Italian markets still required a coarse, heavy, dark type of tobacco leaf and the bright tobacco of the Carolinas and Virginia was used for smoking tobacco and cigarettes; presumably for domestic manufacture, since there is no reference to export of this type.² Apparently the promise of 1884 had not yet materialized. In 1900, the Secretary of Agriculture remarked that bright tobacco exports to Great Britain and Japan had "increased enormously" in the past few years.³ Since Great Britain was taking over 100,000,000 pounds of our tobacco by this time, it appears that bright tobacco had a very considerable place in our foreign trade by the end of the

¹Dodge, op. cit., p. 57.

²Yearbook of the Department of Agriculture, 1894, p. 143.

³Yearbook of the Department of Agriculture, 1900, pp. 49-50.

nineteenth century. Bright tobacco, moreover, was given a gold medal at the Paris Exposition, ranking with Turkish leaf in general utility, though the latter was adjudged somewhat superior for cigarettes. Furthermore many foreign countries were attempting to produce bright tobacco from our seed, and bright tobacco was, by 1900, finding its way into every market in which cigarettes were produced. It did not yet rank with the dark types in the general European trade, however.

Development of bright tobacco leaf exports from 1900 to 1921 must have been phenomenal, for in 1922 it was officially stated that recent increases in leaf export appeared to be due to increases in bright tobacco exports, and that about half of the flue-cured production of 415,400,000 pounds was exported.¹ In fact, by 1926 bright tobacco had been paramount in the export tobacco trade "for many years."² A reliable source estimated in 1912 that exports of bright tobacco leaf were approximately as follows: to Great Britain, 48,000,000 pounds; to Canada and China, 10,000,000 pounds each; to Australia, 8,000,000 pounds; to Japan, 2,000,000 pounds; and to other countries, chiefly smaller European customers and South Africa, about 10,000,000 pounds. This would total 88,000,000 pounds of a total production of flue-cured estimated at 215,000,000 pounds. The same source estimated the export of dark-fired tobaccos in 1912 at more than twice the export of bright tobacco.³ Other estimates were to the effect that 75 per cent of the leaf exports to Great Britain, and all of the leaf exports to China for the period 1919-1923 were bright tobacco.⁴ This would set the exports of bright leaf to these two countries alone at from 150,000,000 to 250,000,000 pounds for the final years of the period under discussion. It is quite apparent, despite the paucity of statistics, that bright tobacco grew from insignificance in the world markets of 1870 to a commanding position by the close of the World War. Throughout this period its chief markets seem to have been the United Kingdom, the British Domin-

¹Yearbook of the Department of Agriculture, 1922, p. 449.

²Commerce Yearbook, 1926, pp. 222-23.

³U. S. Department of Agriculture, Bureau of Plant Industry, Bulletin No. 244 (Washington: Government Printing Office, 1912).

⁴U. S. Department of Commerce, Trade Promotion Series, Number 7 (Washington: Government Printing Office, 1925), pp. 19, 38, and 80.

ions, and China.

Export trade in manufactured tobacco, 1860-1923.--Export of American tobacco products has never reached great importance as compared with export of leaf. The desire of commercial nations to promote home manufacture led very early to the imposition of extremely high import duties on manufactured products. Snuff and cigars never had any importance in North Carolina manufactures or exports. The only manufactured products exported of any importance to the bright tobacco areas are so-called "manufactured tobacco"¹ and cigarettes. Statistics on these two products are rather unsatisfactory for earlier years, but the figures below will give some indication of their importance.

Export of "manufactured tobacco" from the United States in 1860 totalled over 17,000,000 pounds and was valued at about \$3,373,000. In 1870, this export is not given in pounds, but its value was just over \$1,500,000. The value in 1880 was approximately \$2,000,000.² The destination of these exports is not given, and it is impossible to say what proportion of the export went from North Carolina, or how much of it was bright tobacco.

Bright Tobacco in Foreign Trade, 1923-1937

Increased export during and after the World War.--The already large export of bright tobacco leaf was greatly increased during the World War. The War strongly affected the tobacco customs of the world. Turkish tobacco was largely cut off from world markets at a time when millions of soldiers were learning to smoke cigarettes; and bright tobacco is the chief competitor of Turkish in the cigarette market, though Burley and Maryland leaf are used in considerable quantities in the American blended cigarettes. The result was a heavy demand for bright leaf during the war years and during the immediate post-war period when nations were restocking their depleted reserves. The cigarette continued to gain devotees abroad in a post-war world of depressed finances and cigarette smoking veterans, and bright tobacco leaf exports con-

¹"Manufactured tobacco" usually means smoking and chewing tobacco.

²J. R. Dodge, "Statistics of Manufactures of Tobacco," Tenth Census of the United States (1880), Vol. III, Statistics of Agriculture (Washington: Government Printing Office, 1884), p. 932.

tinued to dominate the world tobacco market (Table 26).

Chief post-war customers.--The United Kingdom has continued to be the principal market for bright tobacco, taking half or more of the total export. China has been a good second to the United Kingdom for much of the post-war period, though her purchases have declined in recent years. British dominions have continued to absorb surprisingly large shipments for their respective populations. Europe is still the chief market for bright tobacco exports, though Germany has in recent years dropped to an insignificant position (Table 27).

TABLE 26

BRIGHT TOBACCO LEAF EXPORTS FOR STATED YEARS*
(In millions of pounds)

Year	Bright Tobacco Export	Other Tobacco Export
1923	180	295
1924	266	281
1925	278	190
1926	287	192
1927	302	204
1928	435	140
1929	411	144
1930	398	163
1931	388	116
1932	255	144
1933	298	175
1934	306	69
1935	290	143
1936	316	101
1937	328	107

* Statistics for 1923-1931 from U. S. Department of Agriculture, Circular No. 249, p. 67; statistics for bright tobacco export for 1932-1937 from Statistical Abstract of the United States, 1937 and 1938; statistics for other tobacco types for 1932-1936 from Yearbook of Agriculture Agricultural Statistics, 1938; and statement as to other types in 1937 is based on the Yearbook of the Tobacco Association of the United States, 1938.

Other customers.--Though the nations listed in Table 27 take the major portion of bright tobacco export, this favored leaf

TABLE 27

CHIEF PURCHASERS OF BRIGHT TOBACCO FOR STATED YEARS*
(In millions of pounds)

Country	1923	1926	1929	1932	1935
United Kingdom	93	126	200	129	152
China	26	83	99	77	29
Australia	14	21	18	11	15
Canada	7	14	13	11	8
Japan	4	7	14	4	9

*Statistics for 1923 and 1926 are taken from Commerce Yearbook, 1926, Vol. I; statistics for 1929 are from Trade Information Bulletin, No. 757, Department of Commerce; statistics for 1932 and 1935 are from Agricultural Statistics, 1938. All figures are given to the nearest million.

TABLE 28

EXPORTS OF BRIGHT TOBACCO LEAF, BY COUNTRIES OF DESTINATION, 1937*
(In millions of pounds)

Country	Export	Country	Export
United Kingdom	196,283	Siam	5,258
China	36,638	Argentina	1,731
France	2,745	Egypt	578
Germany	4,137	Netherlands India	2,768
Australia	18,839	Finland	1,163
Netherlands	6,604	Italy	68
Belgium	6,860	Ceylon	903
Japan	6,862	Newfoundland and Labrador	149
Spain	19	British Malaya	8
Canada	3,732	Trinidad and Tabago	455
Irish Free State	7,633	Czechoslovakia	20
Portugal	592	Jamaica	349
Norway	1,850	Malta, Gozo, and Cyprus	271
Sweden	5,896	Other Portugese Africa	33
Other French Africa	203	Liberia	5
Denmark	2,336	British Guiana	164
Nigeria	260	Other British West Indies	8
Switzerland	193	Uruguay	238
Poland and Danzig	306	Morocco	12
New Zealand	2,676	Mexico	1
Hong Kong	909	Esthonia	201
Kwantung	1,655	British East Africa	229
Gold Coast	29	Nicaragua	119
British India	2,882	Latvia	359
Canary Islands	13	Panama	47
Philippine Islands	1,055	Other countries	1,237
Algeria and Tunis	115		
Total bright tobacco export		327,696	

*From Yearbook of the Tobacco Association of the United States, 1938.

goes to almost every part of the globe (Table 28). Twenty countries took over 1,000,000 pounds each in 1936, and thirty more took between 4,000 and 1,000,000 pounds.

The five countries listed in Table 27 still took approximately 82 per cent of the bright tobacco exported in 1937, but with some changes. Canada continued the decline begun in 1926, taking decidedly secondary rank as a customer, while several of the smaller European countries and Siam attained to considerable poundage.

The "Independents".--Development of such widely-spread markets has not been a matter of chance. These markets have been carefully developed by exporting companies, the so-called "Independents." There is a large and constantly changing number of these companies,¹ and they vary greatly in magnitude of business. Essentially, it is their function to market abroad the annual surplus of bright tobacco production over domestic consumption, but re-drying of the raw tobacco is usually necessary, some of it must be stemmed, all of it must be re-graded and packed, and some of it must be stored for a time. A very considerable processing and storing business, therefore, is an adjunct of the independent dealer's trading. Some companies own "tobacco factories," in which the processing is done, and warehouses for storage; others lease the "factories" or have the processing and storage done by others. The "factories" are concentrated, naturally, in the larger market towns, but one or more is to be found in almost every market (Fig. 17).

There appears to be no enmity between the "Independents" and the "Big Four." The "Independents" state that they take chiefly tobacco grades for which there is an insufficient domestic demand and that they, therefore, relieve the manufacturing companies of the necessity to take this unwanted tobacco in order to satisfy the tobacco farmers.² The "Independents" at times sell tobacco leaf to the "Big Four," sell to each other, buy on contract for each other, and, in general, give an impression of the

¹One issue (December 29, 1936) of "The Western Tobacco Journal" carried advertisements of thirty-one companies doing business in North Carolina and twenty-two doing business in Virginia.

²This statement is based on conversations with a number of tobacco men, representing both the "Big Four" and the "Independents."

most genial rivalry imaginable. They are represented on one or more markets by their own or commission buyers. Some of them buy on contract for foreign firms or foreign "regies"; some buy for themselves and sell to foreign buyers; some buy for themselves and for foreign clients. There are many rumors that certain companies are owned by larger companies and are doing under-cover buying for them, and some of the "Independents" are more or less openly subsidiaries of other companies. The ramifications of ownership among these companies have at times attracted the attention of the Congress,¹ since it would be possible for a great foreign company to mask its operations, particularly to give an impression of competition, by operating through one or more smaller concerns. It appears certain that most of the "Independents" are bona-fide traders on the world market, and it is certain that they have made markets for bright tobacco.

Many of the "Independent" companies send salesmen to call on their customers in foreign lands and to introduce their leaf in new areas. Some of them send a representative around the world annually on such selling trips. The British-American, through a subsidiary, is said to be the greatest of the "Independents," exporting an average of over a hundred million pounds of all types of leaf in the period 1921-1931.² The Imperial Tobacco Company is another great buyer, taking over 76,000,000 of bright leaf in 1924.³ Of these two giants, the Imperial has actively developed the cigarette market of the United Kingdom and the Irish Free State, while the British-American has developed markets outside the United States and the United Kingdom, but particularly has devoted itself to China. Some of the smaller companies have specialized in one market, as, for example, one company known to the writer which sells its tobacco to one customer in England, shipping to one port, Southampton. Some have specialized in particular types of tobacco, selling those types all over the world.

The China trade.--Perhaps the best example of promotional

¹See U. S. Congress, House, op. cit., passim, particularly the testimony of H. M. Robertson.

²Statement of the president of Brown and Williamson Tobacco Company, reported in Tobacco Taxes, 63d Cong., 2d Sess. (Washington: Government Printing Office, 1934), pp. 226-27.

³Senate Document No. 34, 69th Cong., 1st Sess. (Washington: Government Printing Office, 1926), p. 32.

work for bright tobacco and its products is the development of the Chinese market. The story of the British-American Tobacco Company in this field has been well told.¹ The Duke interests selected a tobacco salesman already experienced in the Pacific tobacco trade and sent him to China to develop a cigarette market. He introduced cigarettes into Korea and the Shantung area of China in 1897. Four years later he established factories in both sections to manufacture, from imported bright tobacco, cigarettes cheap enough and in small enough packages to suit the Chinese trade. He was made manager of the Chinese business of the British-American Tobacco Company upon its organization in 1902 and continued operations without change of policy. His output soon reached a half-billion cigarettes per month and he decided to increase purchasing power among his clientele, insure a supply of tobacco for his factories, and enable himself to produce a still cheaper cigarette by promoting Chinese production of bright tobacco. He brought over tobacco farmers from the Old Belt, and a soils expert, and began to encourage experimental plantings among Chinese farmers, supplying seed and fertilizer as well as free expert advice. He succeeded so well as to become alarmed about the stability of purchasing power among his clients. He preached diversification, and persuaded Chinese farmers to grow alfalfa. Meanwhile, his salesmen were penetrating interior China by any and every mode of transportation, giving away samples of cigarettes, signing contracts with dealers, spreading clever advertising of many varieties. He manufactured and sold cigarettes, importing bright tobacco to season the domestic product, through the Boxer Rebellion, the Chinese Revolution, the Russo-Japanese War, through famine and flood. He organized relief measures in times of stress; he hired bandits for protection in times of disorder; he established schools; he learned Chinese etiquette and followed it; he developed a licorice business in Kansu; he adapted his advertising to the Chinese taste and his package to the Chinese currency. In short, he made the British-American Tobacco Company an integral part of China--and he sold bright tobacco!

The tremendous Chinese imports of later years have been stated (Table 27). It would be unfair to attribute them entirely

¹James A. Thomas, A Pioneer Tobacco Merchant in the Orient (Durham: Duke University Press, 1928).

to the efforts of the British-American Tobacco Company, for other companies have taken a notable part in the China trade, but it would not be an exaggeration to say that the verve, the understanding, and the adaptation of product to people which mark the progress of the British-American in China appear to be characteristic of the "Independents," as the writer has seen them. Their intimate knowledge of the preferences of their customers is astonishing when revealed in small Carolina towns, in the shade of a small warehouse on a quiet, weed-grown street. Tobacco for Esthonia is packed in bales, for example, because "a lot of those fellows have little factories that used to be their houses. They have little doors between the rooms, and they can't roll a hog's-head through them." Tobacco for the Gold Coast is packed in waterproof bales, after being very heavily sweetened and flavored, because "they just throw it off the ship at a lot of those little stations, and those Kru boys go out and get the bales out of the surf. Those fellows chew it first; then, after they get all the taste out of it, they dry it and smoke it in their pipes." The tobacco traders of the small Carolina and Virginia towns are world-minded, as well as tobacco-minded. They know tobacco, and they know world markets.

Recent nationalism.--The "Independents" have not thus far been able to combat the recent upswing of nationalistic feeling which has made their tobacco anathema to many nations. For several years past, when they sold tobacco to a German firm they signed a contract to take in exchange an equivalent value from a list of German products. Recently, this regulation was relaxed, but the German Fuehrer is reported to be urging his young men to abstain from tobacco,¹ and the Rhineland is producing a flue-cured tobacco--not, it is reported, the equivalent of bright tobacco.² Tobacco Markets and Conditions Abroad³ reports, month by month, increased taxation, quotas, experimental plantings of flue-cured types, using American seed and American methods. Almost without exception, however, the official report states that

¹News and Observer, March 4, 1939.

²Tobacco Markets and Conditions Abroad, July 27, 1937.

³Published weekly by the Department of Commerce, Bureau of Foreign and Domestic Commerce.

the "trade" still wishes bright tobacco and will import it when, and if, it can, and that the experimental plantings produce a light-colored tobacco, ". . . but without the aroma and flavor of the American product." The tobacco traders seem to feel quite secure in their faith in bright tobacco and the preference of the world for their product rather than the "adulterants" of foreign national or colonial production.¹

Post-War Exports of Bright Tobacco Manufactures

Cigarettes are the chief medium for export of bright tobacco in manufactured form. Smoking tobacco and chewing tobacco exports are small, and their content is greatly varied. It would be impossible to ascertain the amount of bright tobacco exported in these products, but it is safe to say that it is a very small factor in the total bright tobacco export trade. The same uncertainty prevails as to the tobacco content of cigarettes, but it may be assumed that there is a considerable content of bright tobacco, and it may, further, be assumed that many of the exported cigarettes were manufactured in North Carolina.

Cigarette exports have never been large as compared with domestic consumption, but they rose to a considerable total in the post-World War period, only to decline in recent years. China has been the great market for American cigarettes, largely because the weakness of the Chinese Government prevented effective measures for fostering home manufactures at the expense of imports. The Central Government was strong enough by 1929 to impose an autonomous tariff designed to curtail imports and promote domestic manufacture, and by 1930 to impose heavier duties on luxuries, including cigarettes.² The cigarette import declined, and recent disorders and changes in China have further reduced it. Exports of cigarettes for the period 1919-1923 averaged almost thirteen billions, of which approximately three-fourths went to China. Cigarette exports of 1936 were only about four and a

¹It seems quite possible, however, that these "adulterants" may eventually have a serious effect on bright tobacco exports. Thus, it is reported that Indian flue-cured tobacco can be used up to 10 per cent in high-grade British cigarettes (News and Observer, April 4, 1938).

²Grover Clark, Economic Rivalries in China (Yale University Press, 1932).

half billions, scattered among ninety-nine countries, of which only one, the Philippine Islands, took as many as a billion. Chinese cigarette imports for 1935 and 1936 averaged only some 87,000,000 annually.¹

Trade Channels of Bright Tobacco Export

New York, the chief tobacco port, 1860-1921.--New York was the chief tobacco port for the period between the Civil War and 1920, with Baltimore and New Orleans as great secondary ports. New York, with its central location, developed a significant tobacco trade even prior to the Revolution, bringing tobacco in coasting vessels from Virginia and North Carolina waters.² New Orleans and Baltimore had in their respective trade areas very large producers of "shipping" tobacco types. New York added western tobacco to its coastwise collection when canal and railway gave it access to the Mississippi Valley. The Virginia ports, on the other hand, had only their own back country to draw from, and export of Virginia tobaccos declined after the Revolution. The interruption of trade from Virginia ports during the Civil War doubtless gave added impetus to New York shipment of Virginia and North Carolina produce, but it appears likely that in time other factors would have brought about the same result.

The chief of the factors affecting the routing of the tobacco trade is the nature of tobacco as a cargo. Tobacco stows "light" at 55, when packed in hogsheads.³ It is not, therefore, a desirable whole cargo, but it is excellent "topping" for heavier cargoes and it is easily handled as package freight. It is a clean commodity, non-perishable; and its package makes it easy to handle. When packed in hogsheads, as is usually the case,⁴ it

¹Based on statistics from Commerce Yearbook, 1923 and 1931, Vol. I, and Tobacco Markets and Conditions Abroad, No. 606, February 16, 1937.

²For a discussion of early New York tobacco trade, see Robert G. Albion, The Rise of New York Port (New York: Chas. Scribner's Sons, 1939).

³Mr. William Holmes Davis, tobacco handler of Norfolk, Virginia.

⁴Tobacco is shipped mainly in hogsheads (1,200-1,250 lbs.), but is shipped in tierces also (950-1,000 lbs.), in boxes (500 lbs.), bales (500 lbs.), and in half-hogsheads. Statement of Mr. Sidney Smith, Hidden Storage and Forwarding Co., Newport News, Virginia.

requires no special attention on a voyage and it stows with reasonable space economy, the space-loss averaging about 30 per cent if three tiers of hogsheads can be stowed.¹ The high value of tobacco and the difficulty of replacing it if lost tend further to make tobacco a part-cargo or package commodity. A ship with a capacity of 4,000 cargo tons can stow 5,000 to 6,000 hogsheads of tobacco.² The value of such a cargo might well run to several million dollars, but its replacement value might be much higher, and it might be impossible to replace it, type for type, within a year. Since cigarettes of certain brands contain tobaccos of a definite type and of specified age, the replacement difficulty is a serious one. Thus, from the viewpoint of the shipowner or the owner of the cargo, tobacco is decidedly not a whole-cargo commodity, and it is very seldom so shipped.

The strong tendency toward package or part-cargo shipments makes tobacco a "line," rather than a "charter" freight. The statements made above apply even more, of course, to manufactured tobacco than to the leaf. Both leaf and tobacco manufactures tend, therefore, to seek ports from which there are frequent sailings of line ships. New York was such a port prior to the Civil War. The decline of the American Merchant Marine and of the "charter" ship after the Civil War is well-known and need not be discussed here, as is the increase in size and speed of ocean carriers. The large line ships under foreign flags concentrated their scheduled sailings at a few great ports, chiefly at New York. Tobacco from the Atlantic seaboard tended more and more to seek New York as a port, aided by the fact that its high value made it capable of paying land transportation charges.

New York was the outstanding tobacco port until after the World War. In the fiscal year ending June 30, 1898, tobacco leaf exports were distributed as follows: New York, 111,000,000 pounds; Baltimore, 77,500,000 pounds; New Orleans, 20,000,000 pounds; Pensacola, 11,500,000 pounds; Philadelphia, 7,500,000 pounds; Newport News, 7,000,000 pounds; Boston, 4,500,000 pounds; Norfolk and Portsmouth, 3,000,000 pounds; other ports, 7,500,000 pounds. In the period 1915-1919, there was no great change in

¹Mr. William Holmes Davis, Norfolk, Virginia.

²Statement of Mr. Sidney Smith, Hiden Storage and Forwarding Company, Newport News, Virginia.

leadership among the tobacco ports. Average shipments for these years were as follows: New York ports, 186,000,000 pounds; Maryland ports, 99,000,000 pounds; New Orleans, 72,000,000 pounds; Virginia ports, 22,000,000 pounds; other ports, 97,000,000 pounds.¹ Virginia ports exported about 4 per cent of the nation's tobacco in 1898, and about 4.6 per cent in 1915-1919.

Rise of the Virginia ports, 1920-1937.--Norfolk, Newport News, and Portsmouth--the Virginia ports on Hampton Roads, came abruptly to the front in tobacco export in two years, 1920-1921, and have held their position since, while New York as a tobacco port has progressively declined. Hampton Roads has shipped from 60 to 70 per cent of the nation's export tobacco for the past eighteen years.²

The phenomenal rise of bright tobacco in the United States export trade shifted the main production area for export tobacco from Maryland, central Virginia, and the Mississippi Valley to the southeastern states. Other areas continued to export tobacco, but the emphasis in export was definitely, after the World War, on the Virginia-Carolina bright tobacco region. There was, therefore, once more a vast poundage of tobacco seeking a port at the Virginia capes. Fortunately, the port facilities were adequate. The United States army and navy had built during the World War great depots in the Hampton Roads area--one in Norfolk, one in Portsmouth, and one in Newport News. These depots were taken over at the conclusion of the war by various storage and handling companies and, since tobacco shipment requires no specialized port equipment, they were adequate for storing and shipping an enormous tonnage of tobacco. These depots were supplemented by great warehouses and piers constructed in 1916 by the Imperial Tobacco Company and used for shipping that company's very large purchases of bright tobacco. Adequate port facilities were matched by adequate line sailings, for the United States Shipping Board fostered a renaissance of the American mercantile marine after the World War. A number of American lines scheduled regular sailings from Hampton Roads to world ports, and foreign lines

¹Yearbook of the Tobacco Association of the United States, 1938.

²Mr. W. Duvall Brown, Bureau of Foreign and Domestic Trade, Norfolk.

followed suit. In 1938, more than fifty lines scheduled more than one hundred monthly sailings from Hampton Roads. There were weekly sailings to the chief European ports, fourteen to sixteen sailings monthly to Oriental ports, and several lines giving regular service to South American ports.¹ An active campaign by business interests of the three cities involved capitalized on the new potentialities in the tobacco trade, and Hampton Roads is now easily the world's great tobacco exporter.

TABLE 29

EXPORT OF TOBACCO LEAD AND STEMS, BY CUSTOMS DISTRICTS, 1918-1937*
(000,000 Omitted)

Year	Md.	N.Y.	Va.	N.O.	S.C.	N.C.	Ga.	Other
1918	77	124	11	66	..	..	..	129
1919	154	272	44	149	..	..	..	157
1920	75	142	106	98	4	..	..	55
1921	50	69	210	132	10	..	..	51
1922	10	43	211	125	10	..	..	44
1923	28	53	247	135	9	..	..	25
1924	20	77	278	143	3	..	..	56
1925	27	47	240	99	6	..	..	58
1926	26	40	264	109	3	..	..	1
1927	34	39	295	104	6	..	..	33
1928	17	29	419	79	3	..	..	35
1929	19	32	401	73	6	..	..	35
1930	17	33	382	95	8	..	..	..
1931	12	15	380	72	8	7	9	23
1932	12	21	263	85	3	9	2	15
1933	9	19	286	83	10	12	7	14
1934	7	15	300	78	..	19	7	13
1935	5	16	266	61	..	32	9	7
1936	6	14	301	60	4	24	11	6
1937	5	12	299	58	10	30	12	10

*Statistics to the nearest million pounds from Yearbook of the Tobacco Association of the United States, 1938.

The same factors which accounted for the spectacular rise of Hampton Roads ports in the tobacco world operated in smaller degree in other ports bordering the bright tobacco country. Wilmington, Charleston, and Savannah have profited in varying measure

¹W. A. Cox, Director of the Port, The State Port Authority of Virginia, Norfolk. Letter to the author.

by the shift in export trade. New Orleans appears to have held the trade of its hinterland, but ports to the north of Hampton Road have progressively declined (Table 29).

Transportation to port.--Most tobacco leaf goes by rail to the Hampton Roads ports. All of the tobacco of the Imperial Tobacco Company is transported by rail and probably three-fourths of all tobacco shipped to the Virginia ports. There is a very small and irregular shipment into Norfolk by water from small North Carolina harbors, but most of the tobacco not shipped by rail is brought in by trucks.¹ Both rail and highway serve the bright tobacco area quite adequately for a product so easily transportable as tobacco. Most of the tobacco comes to one of the several storage depots in hogsheads and is held and shipped on order from the "Independent" company which owns it. It is re-packed into other containers here if the owner so desires, but as a rule no processing or re-packing is required.

Foreign bright tobacco ports.--Six ports in the British Isles--Liverpool, Avonmouth, London, Southampton, Manchester, and Belfast, took more than half of the 1936 leaf tobacco export of the Hampton Roads ports. Shanghai, Sydney, Hamburg, and Bremen took shipments ranging from 12,628 cargo tons for Shanghai to 3,585 cargo tons for Bremen. The ten ports named took approximately three-fourths of the total Hampton Roads shipments. The remainder was scattered among fifty-eight ports of Europe, Asia, Australasia, South America, and Africa.²

¹Estimate by Mr. William Holmes Davis, reported to be the leading expert on tobacco transportation in Norfolk. Corroborated by members of his staff. No accurate records of this transportation are kept.

²Report on Volume of Water Borne Foreign Commerce of the United States by Ports of Origin and Destination, 1936 (Published by United States Maritime Commission, Division of Research).

CHAPTER V

CONCLUSIONS

Production of bright tobacco is definitely localized in parts of six states of the southeastern United States. Its localization in the Southeast is based on a combination of factors which is found nowhere else in the world. These factors are, first, the presence of large bodies of infertile sandy loam soils with sandy, quick-draining subsoils in an area with a fairly uniform climate of the type found on eastern margins of continents in the lower middle latitudes. Second, there is in this area a large body of farmers who through years of experience have gained the knowledge, skill, and capacity for tedious hand labor necessary in production of bright tobacco. Third, the population pressure on the land of the Southeast is not too great to permit the use of large acreages for production of a non-subsistence crop.

Production of bright tobacco in the southeastern states can be considerably expanded. Possibility of expansion is indicated by the presence within the region of large areas which are essentially similar in climate, soil, and population to the producing belts but which do not now grow tobacco, and by the rapid expansion of tobacco culture into such areas during the past half-century. Possibility of expansion is qualified by competition of other crops now grown in these areas, by the necessity for building curing barns and warehouses and organizing markets before the crop can be introduced successfully, and by the need of experienced tobacco farmers to grow and cure the crop. These difficulties have not proved insuperable in the past, however, and it seems quite probable, unless control measures are resumed, that there will be a considerable expansion of bright tobacco acreage in the southeastern states.

A number of foreign countries produce light-colored tobaccos which can be substituted to a small degree for bright tobacco. Their product is the result of a long period of intensive effort to duplicate bright tobacco. However, the fact that no

one of these tobaccos can be used in high grade cigarettes except sparingly seems to indicate that none of these countries is likely to produce a serious competitor in the world market for the true bright tobacco. Foreign light-colored tobaccos reduce the foreign market for bright tobacco, however, particularly in those countries which have a domestic or colonial production of such tobaccos. China, among the many countries which have attempted to produce bright tobacco, seems in certain provinces most nearly to duplicate the conditions under which it is grown in the Southeast and most nearly to approach it in color, body, and aroma. The pressure of population in China, however, limits the acreage which can be devoted to a money crop and the enormous Chinese consumption of tobacco will probably prevent any very large quantity of this leaf from appearing in the world market.

Distribution of bright tobacco acreage within the six southeastern states which produce it seems, from a study of such distribution in North Carolina, to be closely related to the distribution of Cecil sandy loams, Norfolk sandy loams, and Norfolk sands, and soils of the same general types. Bright tobacco gives a far higher per-acre return on such soils than any other crop except certain small fruits and truck crops for which there is only a limited demand. It seems certain, therefore, that tobacco will continue on these soils as long as the demand warrants it.

Bright tobacco production is in the hands of a group of farmers who, for a low per-hour compensation, apply the complicated techniques of sand-farming to large-scale field production and conduct successfully a delicate and variable curing process. Some readjustment of the bright tobacco industry seems desirable for the purpose of securing for these men a better return for their labor and for their highly technical skill. Fundamentally such a readjustment must raise the farm price of the leaf.

The market system which southeastern tobacco districts have evolved through more than two centuries of experience is markedly efficient in handling a very large leaf production in a short period of time and on the whole is quite adequate to the needs of the region. The markets are well distributed over the tobacco belts and they insure the farmer reliable, prompt, and convenient sale of his produce and immediate payment for it in cash. However, the fact that farmers and buyers do not grade tobacco according to the same standards and, in fact, have no

mutual understanding as to grades, makes it necessary under the present system for the buyer to appraise tobacco on the warehouse floor. The speed with which sales are conducted forces the buyer to make his appraisal of any one lot of tobacco almost instantaneously. The buyer's judgment of any one lot of leaf is subject to error in this rapid appraisal, but his average judgment of a great many lots is satisfactory to the companies which employ him. The farmer, however, offers only a few lots of tobacco during a season. He feels that these few lots are not enough to insure him a dependable average judgment, and he feels that he may suffer as an individual, though the average price for all tobacco sold may be a fair one. It would seem that an agreement of farmer and buyer as to standard grades for tobacco, and education of the farmer in grading his leaf according to these standards, would obviate this difficulty. The United States Department of Agriculture and the several state departments of agriculture are working in this direction. Their eventual success seems assured and, with this improvement, the colorful auction sale will present one of the best organized systems in the country for the sale of farm produce.

Manufacture of bright tobacco products is concentrated chiefly in five cities of Piedmont North Carolina and Virginia. Its high degree of localization seems to be due to an early development of smoking tobacco manufacture and later of cigarette manufacture in this area by men who knew the bright tobacco leaf and were experienced in tobacco manufacturing through contact with small factories common to the area before the Civil War. The development of the great cigarette companies in the same general area is due partly to this early start and partly to the general suitability of the southern Piedmont for light manufacturing enterprises. The cigarette companies have indicated their satisfaction with their present locations by recent additions to the plants, and there is no reason to think that the present localization of the industry will be notably changed in the near future.

The service of the great cigarette companies to the bright tobacco industry hardly can be exaggerated. These great companies have assumed the task of maintaining and promoting the sale of the "blended" cigarette, the chief outlet for bright tobacco in the domestic market. They have developed in this cigarette a

product which is standardized and dependable, convenient, and pleasing to the popular taste. They have pressed the sales of these cigarettes in continuous and highly effective advertising for the past twenty-five years. The success of the whole industry has been dependent largely on the ability of these companies to dispose of the finished product, and the expansion of the industry has been dependent largely on the growth of the cigarette companies.

Exporters of bright tobacco leaf, like the manufacturers, are concentrated in the producing areas. Unlike the manufacturers, they are widely distributed in the several belts, seeking locations in the market towns and on railways where they have convenient access to auction sales and to transportation to the tobacco ports. Like the manufacturers, and in almost the same degree, the exporters are essential to the welfare of the entire bright tobacco industry. Approximately half of the leaf production is, through their ceaseless effort and by their wide-spread organization, distributed to foreign buyers. Their sales have kept pace with increasing farm production. But for this increase in export, the bright tobacco industry must have stopped far short of its present development.

Some phases of the bright tobacco industry are disturbing. The low return to the farmer for his labor has been mentioned and the statement made that fundamentally an increase in the farmer's return for his labor must depend on an increase in the farm price of the leaf. Since approximately half of the bright tobacco crop is exported, tobacco leaf prices are world prices. Therefore, any attempt to increase the farm price must take account of both the domestic and the foreign markets. One way to raise farm prices would be to reduce domestic taxation of cigarettes and to induce foreign governments to reduce duties on leaf imports, making provisions, of course, to insure that the farmer would benefit from the reduction in taxes and duties. Unfortunately for the bright tobacco farmer, his type of tobacco is produced in only six states. Bright tobacco has a small representation in the Congress, therefore, as compared with some of the more widely distributed farm products. On the other hand, all states are concerned with the Federal revenue from tobacco taxes. It seems unlikely, therefore, that domestic taxes on tobacco products will be reduced. For the same reason, it appears unlikely that the

United States will press for reduction of foreign duties on bright tobacco imports. Any such reduction on the part of foreign governments would probably involve a reciprocal reduction in duty on imports into the United States. This reduction of duty would be opposed by some group or groups of affected domestic producers and the small representation of the bright tobacco states in the Congress would probably mean that the opposition would triumph.

As there is a potentiality of considerable overproduction in the bright tobacco areas, acreage control of some sort seems necessary to raise prices or even to maintain them at present levels. Co-operative control of production has failed in the past and would probably fail again unless some provision could be made to prevent non-cooperating farmers from increasing their acreage to take advantage of any improvement of price which might result from the co-operative movement. It seems that some type of governmental control of acreage is necessary, and the interstate nature of bright tobacco production would seem to indicate that the Federal Government should impose this control. It seems, despite the recent defeat of Federal acreage and production control, that such control is necessary for the welfare of the bright tobacco farmers and that it eventually would command their loyalty.

Soil-impairment is a problem in bright tobacco production. Soil impoverishment is common to all tobacco growing areas, for tobacco is a heavy feeder. This impoverishment of soils is a comparatively slight loss on bright tobacco lands, however, for much bright tobacco is grown on lands originally so infertile as to be distinctly marginal for general farming. Soil improvement is difficult on lands devoted to bright tobacco, since the heavy manuring and the cultivation of legumes upon which the soil improver customarily depends are dangerous practices for the bright tobacco farmer. It would seem that persons who deplore the lack of soil building in tobacco districts have in mind only the type of soil suited to general farming, forgetting that "improvement" of a soil for bright tobacco might involve leaching it of nitrogenous compounds, rather than adding them. It would seem, too, that they fail to take clearly into account the present productivity of the land as cropped in bright tobacco as against its probable productivity in other crops after it has been "improved."

Soil erosion must be considered separately for the Pied-

mont and the Coastal Plain. Erosion is not serious on the sandy, almost level lands of the Coastal Plain. In the Piedmont Old Belt and Middle Belt, however, it is quite serious. Most of the tobacco soils of these two belts are located on divides and the fields slope more or less steeply. In an area of heavy rains, such sloping fields suffer severely when cultivated in tobacco. The continuous clean cultivation required during the growing season keeps the soil loose and ready to wash, and the fact that bright tobacco farmers fear to grow legumes on tobacco lands restricts the use of such crops as clover for winter cover. Sheet erosion and gullying have taken a terrific toll from Old and Middle Belt farms and are now destroying the remnants of cultivable soil upon which the farm population depends. No acceptable substitute for tobacco has yet been proposed for any large part of the area. Various agricultural agencies have mitigated the damage to soil by encouraging soil conservation practices on the less steeply sloping farm lands, but much of the land is so steep as to indicate that a return to forest is the only method of saving it.

Natural processes now in operation in the Old Belt and Middle Belt should be studied carefully before a decision is made as to the wisdom of reforesting large areas of farm land in this district. The natural process begins with a gradual but swift destruction of soil cultivated on sloping land. Land so destroyed is abandoned and begins promptly to grow up in a tangle of vegetation within which appear many small pine trees. The vegetation checks erosion sufficiently for the pine trees to develop, and many such eroded areas grow, in a relatively short time, an apparently satisfactory stand of pine forest. The soil destroyed was originally so infertile as to be considered worthless for general farming, and certainly the lands which would be taken out of farming and put into forest in any action based on land-planning would be sub-marginal for ordinary use. If, then, the forest which grows on abandoned lands is satisfactory, the utilization of the land in bright tobacco production has entailed no great loss. Land desirable only for bright tobacco or for forest, if it can support people for a generation or two and still grow a satisfactory forest, might well be allowed to continue in bright tobacco for varying periods and might be retired, forested under supervision, and taken under governmental control piece-meal and

over a considerable period of time. Such action would allow each farmer to consult his own desires and, if he wished, to live out his life on his home farm. Secondary effects of continued tobacco farming on these steep lands should be weighed--such effects as flooding of bottom lands or the silting-up of power reservoirs. It seems quite likely that a careful study would show that natural processes in the steeper Piedmont lands will accomplish ultimately an excellent land-use pattern, and that little would be gained by accelerating the process.

Development of bright tobacco production in the Southeast has unquestionably added greatly to the capacity of the region to support population. It is the chief support not only of a large farm population but of thriving market towns throughout the growing belts. It contributes greatly to the support of the cities within which it is manufactured, as well, and its export furnishes employment to a considerable group. Furthermore bright tobacco is a national asset in that a large share of the Federal income is derived from taxation of cigarettes and in that it offers an export commodity of almost universal appeal and of great aggregate value.

Consideration of the bright tobacco industry in its various phases emphasizes its essential unity. Farm production depends on effective marketing, marketing exists to supply the demand of manufacturers and exporters, and the common efforts of manufacturers and exporters are necessary to furnish a market for the farmer's product. Manufacturer and exporter in turn depend on the farmer. Each phase of the industry has developed special techniques and special machines and buildings, but all phases are inter-dependent and each technique, machine, and building is a part of the whole producing process, essential to all other parts of the process and in turn dependent upon every other part and upon the smooth functioning of the industry as a whole.

BIBLIOGRAPHY

- Albion, Robert G. *The Rise of the Port of New York*. New York: Chas. Scribner's Sons, 1939.
- "The American Tobacco Company," *Fortune*, December, 1936, pp. 77 ff.
- Baker, O. E. "Agricultural Regions of North America, Part III: The South," *Economic Geography*, III (1927), 65 ff.
- *Barney, The Chas. D. Company. *The Tobacco Industry*. Published annually. New York: The Chas. D. Barney Company.
- Boyle, James E. "That Ever-Normal Granary," *The Saturday Evening Post*, May 8, 1937, pp. 14 ff.
- *Boyd, W. K. *The Story of Durham; City of the New South*. Durham: Duke University Press, 1927.
- Brewster, J. C. and Company. *Tobacco Culture*. Rare book. Dawson Pamphlets, University of North Carolina Library, Chapel Hill, North Carolina.
- Bruce, P. A. *The Economic History of Virginia in the Seventeenth Century*. 2 vols. New York: The MacMillan Company, 1895.
- *The Bulletin. Published monthly by the North Carolina Department of Agriculture, Raleigh, North Carolina.
- "Camels of Winston-Salem," *Fortune*, January, 1931, pp. 45 ff.
- Clark, Grover. *Economic Rivalries in China*. New Haven: The Yale University Press, 1932.
- *Coleman, Mrs. Louise M. *United States Tobacco and Its Markets*. U. S. Department of Commerce, Bureau of Foreign and Domestic Commerce, Trade Information Bulletin No. 757. Washington: Government Printing Office, 1931.
- Commissioner of Corporations. *Report on the Tobacco Industry*. Part III. Washington: Government Printing Office, 1915.
- Connor, R. D. W. *History of North Carolina*. Vol. I. 6 vols. Chicago and New York: The Lewis Publishing Company, 1919.
- *Cox, Reavis. *Competition in the American Tobacco Industry*. New York: Columbia University Press, 1933.
- Craven, A. O. *Soil Exhaustion as a Factor in the History of Virginia and Maryland, 1606-1860*. University of Illinois Studies in the Social Sciences, Vol. XIII. Urbana: The University of Illinois, 1926.
- Dodd, William E. *The Old South Struggles for Democracy*. New York: The MacMillan Company, 1937.
- *Dodge, J. R. *Statistics of Manufactures of Tobacco*. Department of the Interior, Census Office. Washington: Government Printing Office, 1884.
- Duke, J. S. "American Tobacco," *DeBow's Review*, II (1846), 248-67.

- Erickson, F. C., and Levitt, W. H. "Land Utilization in the University Lake Drainage Basin," *Economic Geography*, XV (1939), 293-302.
- *Farm Forecaster. Published by the North Carolina Crop Reporting Service, Raleigh, North Carolina.
- Farrell, James A. "Sell American," *The Saturday Evening Post*, July 9, 1938, pp. 23 ff.
- *Federal Trade Commission. Co-operative Marketing. Senate Document No. 95. 70th Cong., 1st Sess. Washington: Government Printing Office, 1928.
- *Federal Trade Commission. Prices of Tobacco Products. Senate Document No. 121. 67th Cong., 2d Sess. Washington: Government Printing Office, 1922.
- *Floyd, E. Y. Factors Affecting the Quality of Flue-Cured Tobacco. Extension Circular No. 212. North Carolina Agricultural Service. Raleigh: North Carolina Agricultural Service, 1936.
- Floyd, Marcus L. The World's Exhibit of Leaf Tobacco at the Paris Exposition of 1900. Yearbook of Agriculture, 1900. Washington: Government Printing Office, 1901. Pp. 157-66.
- *Gage, Charles E. American Tobacco Types, Uses, and Markets. U. S. Department of Agriculture, Circular No. 249. Washington: U. S. Department of Agriculture, 1933.
- Garner, W. W. Tobacco Culture. U. S. Department of Agriculture, Farmer's Bulletin No. 571. Washington: Government Printing Office, 1914.
- *Garner, W. W., Allard, H. A., and Clayton, E. E. "The Story of the Development of the Present Day Varieties of Tobacco," Yearbook of Agriculture, 1936. Washington: Government Printing Office, 1937. Pp. 805-28.
- _____. "Superior Germ Plasm in Tobacco," Yearbook of Agriculture, 1936. Washington: Government Printing Office, 1937. Pp. 785-804.
- *Garner, W. W., and Moss, E. G. "History and Status of Tobacco Culture," Yearbook of Agriculture, 1922. Washington: Government Printing Office, 1923. Pp. 395-468.
- *Gray, Lewis Cecil. History of Agriculture in the Southern States to 1860. 2 vols. Washington: The Carnegie Institution of Washington, 1933.
- *Hanna, John. "Agricultural Co-operation in Tobacco," Law and Contemporary Problems. Vol. I. Durham: Duke University Press, 1934.
- Heriot, Thomas. "A Report of Virginia," Hakluyt's Voyages. Vol. VIII. New York: The MacMillan Company, 1904.
- Hobbs, S. H., Jr. North Carolina, Social and Economic. Chapel Hill: The University of North Carolina Press, 1930.
- *Holmes, George K. "Three Centuries of Tobacco," Yearbook of Agriculture, 1919. Washington: Government Printing Office, 1920. Pp. 151-75.
- Hudson, Harris Gary. A Study of Social Regulations in England under James I and Charles I: Drink and Tobacco. Chicago:

University of Chicago Libraries, 1931.

- Hughes, T. L. International Trade in Leaf and Manufactured Tobacco. U. S. Department of Commerce, Bureau of Foreign and Domestic Commerce, Trade Promotion Series No. 7. Washington: Government Printing Office, 1925.
- Hutson, J. B. Factors Affecting the Acreage of Flue-Cured Tobacco. U. S. Department of Agriculture, Bureau of Agricultural Economics. Washington: U. S. Department of Agriculture, 1930.
- Jacobstein, Meyer. The Tobacco Industry in the United States. Columbia University Studies in History, Economics and Public Law. Vol. XXVI, No. 3. New York: Columbia University Press, 1907.
- Jefferson, Thomas. Notes on the State of Virginia. Boston, 1832.
- *Jenkins, J. W. James B. Duke, Master Builder. New York: George H. Doran Company, 1927.
- Johnson, James. Tobacco Diseases and Their Control. U. S. Department of Agriculture, Bulletin No. 1256. Washington: U. S. Department of Agriculture, 1924.
- *Killebrew, J. B. "Report on the Culture and Curing of Tobacco in the United States." Tenth Census of the United States (1880). Vol. III. Statistics of Agriculture. Washington: Government Printing Office, 1884. Pp. 583-880.
- _____. Tobacco Districts and Types. U. S. Department of Agriculture, Bureau of Statistics, Circular No. 18. Washington: U. S. Department of Agriculture, 1909.
- Killebrew, J. B., and Myrick, Herbert. Tobacco Leaf. New York: Orange Judd Company, 1897.
- *Knapp, Joseph B., and Paramore, L. R. "Flue-Cured Tobacco Developments under the A.A.A." Duke University Studies in Law and Contemporary Problems. Vol. II. Durham: Duke University Press, 1935.
- MacGill, C. E. History of Transportation in the United States before 1860. Washington: Carnegie Institution of Washington, 1917.
- MacInnis, C. M. The Early English Tobacco Trade. London: K. Paul, Trench, Trubner and Company, Ltd., 1926.
- McMurtrey, J. E., Jr. "Tobacco . . . May Require Secondary Elements in Fertilizer." Yearbook of Agriculture, 1932. Washington: Government Printing Office, 1932. Pp. 545-48.
- Mathewson, E. H. The Export and Manufacturing Tobaccos of the United States. U. S. Department of Agriculture, Bureau of Plant Industry, Bulletin 244. Washington: Government Printing Office, 1912.
- _____. The Culture of Flue-Cured Tobacco. U. S. Department of Agriculture, Bureau of Plant Industry, Bulletin No. 16. Washington: Government Printing Office, 1913.
- *Mathewson, E. H., and Moss, E. G. Tobacco Culture in North Carolina. North Carolina Agricultural Experiment Station Bulletin No. 237. Raleigh: North Carolina Department of Agriculture, 1917.

- *Moss, E. G., and Bullock, Jas. F. The Culture of Flue-Cured Tobacco in North Carolina. Raleigh: North Carolina Department of Agriculture, 1933.
- News and Observer, The. Daily. Carries many items relating to bright tobacco. Raleigh, North Carolina.
- *North Carolina Agricultural Experiment Station. The Credit Problems of the North Carolina Farmer. Bulletin No. 271. Raleigh: North Carolina Department of Agriculture, 1930.
- North Carolina Agricultural Extension Service. Blue Mold of Tobacco and Its Control. Extension Circular No. 229. Raleigh: North Carolina Agricultural Extension Service, 1938.
- North Carolina Department of Agriculture. Downy Mildew of Tobacco. The Bulletin, December, 1934. Raleigh: North Carolina Agricultural Extension Service, 1934.
- North Carolina Department of Agriculture. Sterilization of Plant Beds. The Bulletin, December, 1934. Raleigh: North Carolina Department of Agriculture, 1934.
- *North Carolina Department of Agriculture. Flue-Cured Tobacco Varieties. The Bulletin, January, 1937. Raleigh: North Carolina Agricultural Extension Service.
- North Carolina Department of Conservation and Development. North Carolina: Today and Tomorrow. Raleigh: North Carolina Department of Conservation and Development, 1936.
- *Odum, Howard W. Southern Regions of the United States. Chapel Hill: The University of North Carolina Press, 1936.
- Olmsted, Frederick Law. A Journey in the Seaboard Slave States. New York and London: G. P. Putnam's Sons, 1904.
- "Philip Morris," Fortune, March, 1936, pp. 106 ff.
- "Porte Crayon." Articles in Harper's Magazine describing travels in Virginia and North Carolina. Harper's Magazine, Vol. XIV (1857). New York: Harper Publishing Company, 1857.
- Pound, Arthur, and Moore, S. T. They Told Barron. New York and London: Harper and Brothers, 1930.
- Ragland, Major Robert L. How to Grow Tobacco. Rare book. Dawson Pamphlets, University of North Carolina Libraries.
- Reidsville Review. "Appreciation Edition," March 16, 1939. Reidsville: The Reidsville Review, 1939.
- *Robert, Joseph Clarke. The Tobacco Kingdom. Durham: Duke University Press, 1938.
- *Rowe, Harold B. Tobacco under the A.A.A. Washington: The Brookings Institution, 1935.
- The State Port Authority of Virginia. The Port of Hampton Roads. Norfolk: The State Port Authority of Virginia, 1937.
- Su, Chong. The Foreign Trade of China. Columbia University Studies in History, Economics and Public Law. Vol. LXXXVII. New York: Columbia University Press, 1919.
- *Thomas, James A. A Pioneer Tobacco Merchant in the Orient. Durham: Duke University Press, 1928.

- *Tobacco Association of the United States, The. Yearbook, 1938. Privately printed, and distributed only to members attending the annual meeting. Available only through members.
- U. S. Bureau of Agricultural Economics. Annual Report on Tobacco Statistics. Washington: U. S. Department of Agriculture, annual.
- U. S. Bureau of the Census. Leaf Tobacco and Tobacco Products. Bulletin No. 146 (1921). Washington: Bureau of the Census, 1921.
- *U. S. Congress, House. Tobacco Taxes. 73d Cong., 2d Sess. Washington: Government Printing Office, 1934.
- U. S. Congress, Senate. Prices of Tobacco Products. Senate Document No. 121. 67th Cong., 2d Sess. Washington: Government Printing Office, 1922.
- *U. S. Congress, Senate. The American Tobacco Company and The Imperial Tobacco Company. Senate Document No. 34. 69th Cong., 1st Sess. Washington: Government Printing Office, 1926.
- *U. S. Congress, Senate. World Trade Barriers in Relation to American Agriculture. Senate Document No. 70. 73d Cong., 1st Sess. Washington: Government Printing Office, 1933.
- *U. S. Department of Agriculture. Soils and Men. Yearbook of Agriculture, 1938. Washington: Government Printing Office, 1939.
- U. S. Department of Agriculture. Steam Sterilization of Soil for Tobacco and Other Crops. Farmer's Bulletin No. 1629. Washington: U. S. Department of Agriculture, 1930.
- U. S. Department of Agriculture, Bureau of Agricultural Economics. Official Standard Grades for Flue-Cured Tobacco. Washington: U. S. Department of Agriculture, 1936.
- U. S. Department of Agriculture, Bureau of Chemistry and Soils. Atlas of American Agriculture, Part III, Soils of the United States. Washington: Government Printing Office, 1935.
- U. S. Department of Agriculture, Bureau of Chemistry and Soils. North Carolina County Soil Survey. Soil surveys of the several counties, notably of Greene, Wilson, Caswell, Mecklenburg, Cleveland, Wake, and Northampton Counties. Washington: Government Printing Office, various dates.
- U. S. Department of Agriculture, Bureau of Statistics. Tobacco Report. Circular No. 38. Washington: Government Printing Office, 1912.
- U. S. Department of Agriculture, Bureau of Statistics. Tobacco Crop of the United States, 1612-1911. Circular No. 33. Washington: Government Printing Office, 1912.
- U. S. Department of Agriculture, Bureau of Statistics. Production and Value of the Tobacco Crop, 1910-1913. Farmer's Bulletin No. 570. Washington: Government Printing Office, 1913.
- U. S. Department of Agriculture, Weather Bureau. Climatic Survey of the United States: Section 95, Western North Carolina;

- Section 96, Central and Southeastern North Carolina; Section 97, Northeastern North Carolina. Washington: Government Printing Office, 1933.
- U. S. Department of Commerce, Bureau of the Census. Stocks of Leaf Tobacco. Bulletin No. 149. Washington: Government Printing Office, 1921.
- *U. S. Department of Commerce, Bureau of Foreign and Domestic Commerce. Tobacco Markets and Conditions Abroad. Published weekly. Washington: U. S. Department of Commerce.
- *U. S. Department of Commerce, Bureau of Foreign and Domestic Commerce. The Tobacco Trade of the World. Special Consular Report No. 68. Washington: Government Printing Office, 1915.
- U. S. Maritime Commission, Division of Research. Report on Volume of Water Borne Foreign Commerce of the United States, 1936. Washington: Government Printing Office, 1937.
- Uzzell, W. E. "History of Tobacco in North Carolina before the Civil War." Unpublished Master's thesis, University of North Carolina Library, 1929.
- *Vance, Rupert B. Human Factors in the South's Agricultural Readjustment. Law and Contemporary Problems. Vol. I. Durham: Duke University Press, 1934.
- _____. Human Geography of the South. Chapel Hill: University of North Carolina Press, 1932.
- Wertenbaker, T. J. Norfolk, Historic Southern Port. Durham: Duke University Press, 1931.
- Western Tobacco Journal. Published weekly. Cincinnati: Western Tobacco Journal.
- *Whitney, Milton, and Floyd, Marcus L. "Growth of the Tobacco Industry." Yearbook of Agriculture, 1899. Washington: Government Printing Office, 1900.
- *Wilkerson, Frank B., and Taylor, Hugh W. Preparation and Marketing of Flue-Cured Tobacco. Washington: U. S. Department of Agriculture, 1935.
- Wolfanger, L. A. "Abandoned Land in a Region of Land Abandonment," Economic Geography, VII (1931), 166-76.
- Woods, Albert F. "The Relation of Nutrition to the Health of Plants." Yearbook of the Department of Agriculture, 1908. Washington: Government Printing Office, 1909.
- *Woofter, T. J., Jr. The Plight of Cigarette Tobacco. Chapel Hill: University of North Carolina Press, 1931.

